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TACTICAL OPERATIONS
OF THE
EIGHTH AIR FORCE
6 JUNE 1944 - 8 MAY 1945

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*Prepared by the USAF
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1952*

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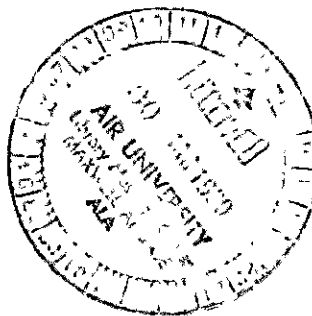
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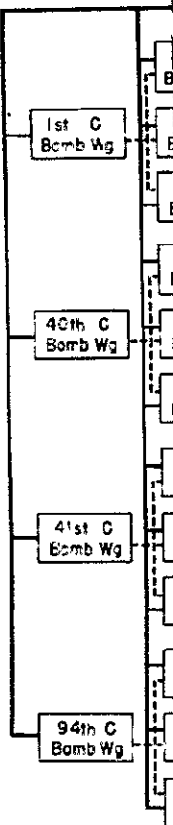


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FOREWORD

This monograph recounts the story of the tactical operations of the Eighth Air Force from D-day to V-E Day, although a discussion of pre-D-day activities is also included in the pertinent chapters when it is an important adjunct to the subject at hand. The difficulty of isolating particular types of tactical operations was weighed against the difficulty inherent in a chronology of operations which partake of all types of air warfare to determine the clearest method of presenting this history. Since neither of these alternatives by itself seemed to provide an adequate structure, a combination of the two forms the basis of the chapter sequence; within that over-all pattern, the types of tactical operations are presented in an order which reflects, not necessarily their relative importance, but the relative ease and certainty with which they may be classified as completely tactical. Thus an account of close-in air cooperation and interdiction precede anti-V-weapon and counter-air operations. Yet, fittingly enough, the narrative of the operations proper begins with Normandy D-day and ends with GRENADE and VARSITY and the German surrender.

Though neither transportation attacks nor airfield attacks are intrinsically tactical, their treatment here has been restricted, for the most part, to operations in the immediate van of the advancing Allied armies; as such, these operations aimed at restricting and crippling the enemy's effort to interfere with that advance, rather than the paralysis of the enemy's production capacity, etc. in the rearward areas. The former, then, have been considered tactical, the latter strategic. Finally, since CROSSBOW represented a definite diversion from long-range strategic operations, the Eighth Air Force part in it was more along tactical lines--until the ground forces overran the "CBALL" target area.

This study, written by Mrs. Juliette Fennessy, is related to three other histories prepared by the USAF Historical Division: AAFRH-22, the Combined Bomber Offensive, 1 January to 6 June 1944; AAFRF-10, The War Against the Luftwaffe: AAF Counter-Air Operations, April 1943-June 1944, both of which recount the Eighth's strategic operations up to D-day; and AFS-36, Ninth Air Force, April to November 1944, which is the story of the operations of a tactical air force in the same theater as the Eighth. The present narrative is subject to revision and additional information and/or corrections will be welcomed.

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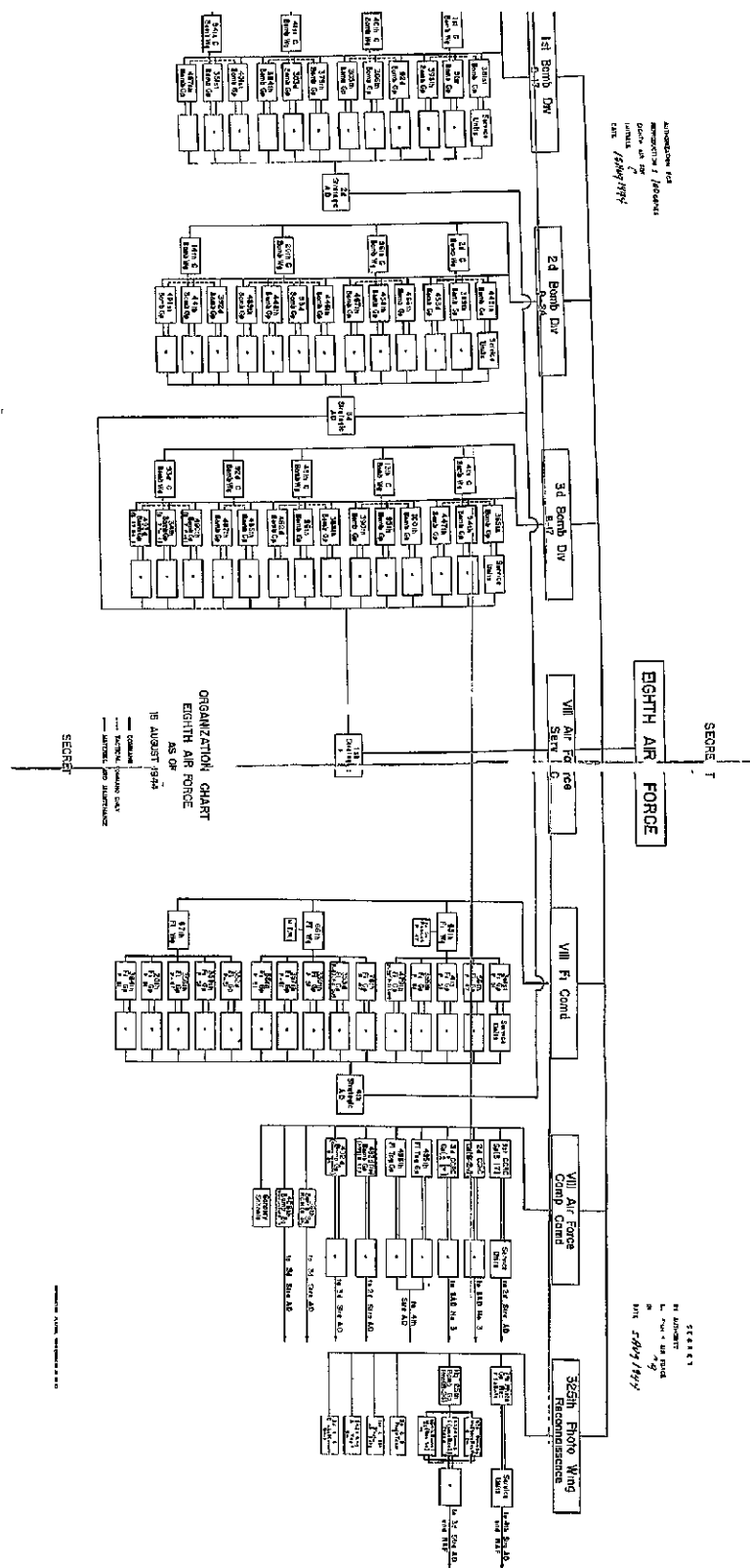
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TACTICAL OPERATIONS OF THE EIGHTH AIR FORCE
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Chapter I

ORGANIZATION OF EIGHTH AIR FORCE

When Maj. Gen. Carl Spaatz assumed command of the Eighth Air Force in the United Kingdom on 18 June 1942,¹ he found already present there a nucleus of the Eighth under his bomber commander, Brig. Gen. Ira C. Eaker, who had been making preparations for bombing operations in the theater since the preceding February. On 8 June the European Theater of Operations, U.S. Army (ETCUSA) had been established, and throughout the war in Europe the Eighth Air Force was to remain a major administrative component of this over-all American headquarters.

Originally scheduled for an invasion of North Africa (GYMNASY) in early 1942, when this project was temporarily abandoned, the Eighth had been sent to England, where plans were already being considered for the invasion of Europe. The Eighth's mission, as conceived by the AAF in June 1942, was the gaining of "air supremacy over Western Continental Europe in preparation for and in support of a combined land, sea, and air movement across the Channel into Continental Europe."² This mission was eventually to be shared, however, with another air force when, in the autumn of 1943, the concepts of strategic and tactical air forces were introduced into the theater and applied to the formation and missions of the Eighth and Ninth Air Forces respectively. As early as November 1942 though, with the invasion of North Africa (TORCH) and the consequent deferment of plans for the invasion of Western Europe, the strategic mission of the Eighth came to the fore. At the Casablanca conference in January 1943, the Combined Chiefs of Staff (CCS) assumed

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control of the operations of the Eighth Air Force and designated as their agent in the theater Air Chief Marshal Sir Charles Portal, Chief of the RAF Air Staff.³

The decision to undertake the invasion of western Europe in 1944, made at Casablanca and confirmed at the TRIDENT conference in May 1943, was implemented in April 1943 by the appointment in London of a Chief of Staff to the Supreme Allied Commander (COSSAC), who was charged with preparing the initial plan for the invasion. As an indispensable preliminary to the invasion, the Eighth Air Force launched the Combined Bomber Offensive (CBO) in June 1943, concentrating much of its early effort against the German Air Force (POINTBLANK).⁴

The establishment of the Ninth Air Force in the United Kingdom in October 1943 as the American tactical air force raised organizational and operational problems of far-reaching consequences. In order to provide an over-all American air headquarters for the ETO, the United States Army Air Forces in the U.K. (USAAFUK) was established on 15 October 1943⁵ under the command of Lt. Gen. Ira C. Eaker, who had succeeded General Spartz as commander of the Eighth Air Force on 1 December 1942. A combined headquarters, the Allied Expeditionary Air Force (AEAF), under the command of Air Chief Marshal Sir Trafford Leigh-Mallory, was set up on 15 November to control the operations of the British and American tactical air forces in the invasion of Europe. Operational control of the Ninth Air Force passed from USAAFUK to AEAF on 15 December 1943.⁶

In January 1944 the organizational machinery for the invasion of western Europe (OVERLORD) was established; Gen. Dwight D. Eisenhower

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as Supreme Allied Commander opened his headquarters on 13 February,⁷ and a new theater air headquarters, United States Strategic Air Forces in Europe (USSTAF) was established on 6 January 1944 under Lt. Gen. Carl Spaatz to succeed to the responsibilities of USAAFUK.⁸ General Spaatz directed the strategic bombing operations of the Eighth and Fifteenth Air Forces, subject to GEO directives from Air Chief Marshal Portal, as well as exercising administrative control over all AAF units in the ETO.⁹ On 8 January 1944 VIII Bomber Command headquarters was redesignated Eighth Air Force headquarters of which Maj. Gen. James H. Doolittle assumed command. The major operational components of the air force until September 1944 were the three bombardment divisions* and the fighter command. The bombardment groups under the divisions had already been organized into combat bombardment wings of two or three groups each, and in September the three fighter wings of the fighter command were assigned to the bombardment divisions.¹⁰ At their peak, the three divisions had a combined strength of 55½ groups, of which 40½ were heavy bombers and 15 were fighters.¹¹

In accordance with previous agreement, on 14 April 1944 USSTAF, of which the Eighth Air Force was the strategic component, passed from the operational control of the CCS to that of the Supreme Allied Commander, who remained in control until 15 September 1944. At that time control of the American and British strategic air force reverted to the CCS, who designated General Arnold and Air Chief Marshal Portal as their agents in control of the respective strategic air forces.¹² The intervening

* 1st Bombardment Division (B-17's), 2d Bombardment Division (B-24's), 3d Bombardment Division (B-17's). For the composition of these and other elements of the Eighth Air Force, see chart in the front of study.

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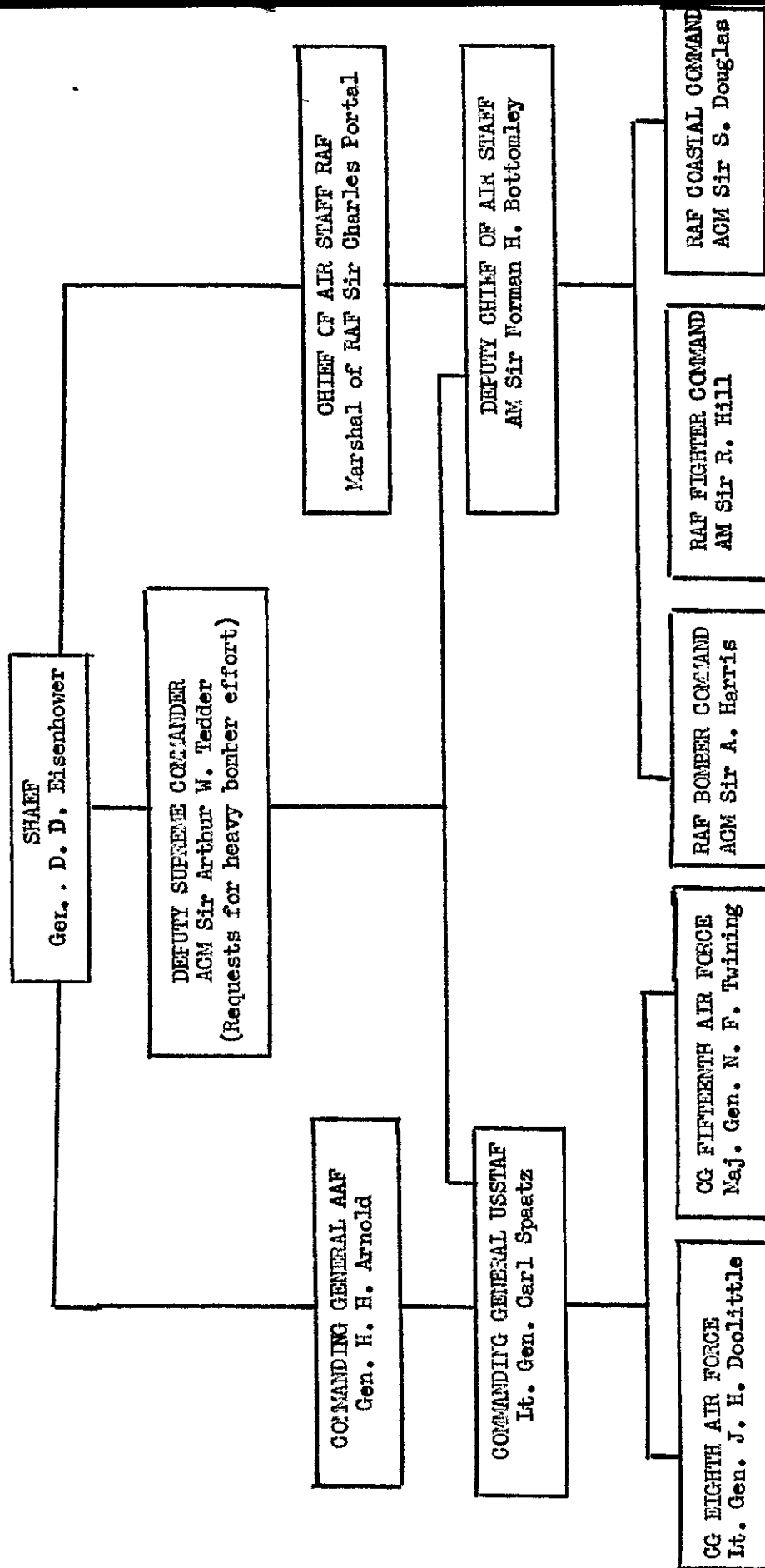
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period, 14 April to 15 September 1944, was one in which the Eighth Air Force made a substantial contribution to tactical air operations in support of OVERLORD.

By 15 September 1944 most of France and Belgium had been retaken by the Allies and the invasion forces from the south had joined with those from the north in one long north-south line extending from Belgium to the Mediterranean. The era of tactical operations for the Eighth Air Force was not over, however, although the greater part of its work continued to be strategic. From 15 September 1944 until the German surrender on 8 May 1945, the Eighth was called upon for various kinds of tactical duties, such as air cooperation with the ground forces, supply drops, interdiction of transportation, and attacks against airfields, operations which were mounted sometimes to the complete exclusion of strategic missions.

During this period further organizational changes took place both in the Eighth's relation to other headquarters and within the air force itself. On 15 October 1944 AEAFF headquarters ceased to exist and in its place the Supreme Headquarters Allied Expeditionary Force (SHAEPF) was established. The Supreme Commander, General Eisenhower, continued in command of all tactical air forces, but the responsibility was largely delegated by him to the Deputy Supreme Commander, Air Chief Marshal Sir Arthur Tedder.¹³ The control of strategic air forces, delegated by the CCS to Arnold and Portal, was in turn given by them to two experienced airmen, Lt. Gen. Carl Spaatz of USSTAF and Air Marshal Sir Norman Bottomley, Deputy Chief of Air Staff, RAF. The Deputy Supreme Commander was responsible for stating to them the Supreme Commander's requirements

CHAIN OF COMMAND--STRATEGIC AND OTHER AIR FORCES



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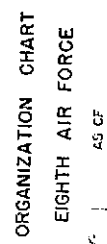
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for strategic bomber effort in support of his operations and for the coordination of such operations with those ground and air forces concerned. Requests by group commanders for bomber support were made to their associated tactical air force commanders, who decided whether to undertake the task with forces already under their command, or to recommend to SPAEF the use of strategic bombers.¹⁴

Within the Eighth Air Force, the reassignment of the three fighter wings to the bombardment divisions on 13 September 1944 necessitated appropriate administrative and command changes. In October General Doolittle, as commander of the Eighth, directed that the three bombardment divisions be given increased responsibility for planning and coordinating their heavy bombing operations.¹⁵ The new plan called for the formation of three air divisions, each of which would be self-sufficient and would include its own bombardment, fighter, and service elements.¹⁶ It was not, however, until 1 January 1945 that Headquarters and Headquarters Squadrons of the 1st, 2d, and 3d Bombardment Divisions were redesignated Headquarters and Headquarters Squadrons, 1st, 2d, and 3d Air Divisions.¹⁷ In addition to this over-all reorganization, on or about 1 February 1945 two fighter groups of the Eighth Air Force--the 352d and the 361st--were moved to bases on the continent for the dual purpose of assisting the Ninth Air Force in its tactical operations and furnishing escort for Eighth Air Force formations. Headquarters VIII Fighter Command was promptly moved to the continent and stationed at Charleroi, Belgium, where its immediate function was to assume administrative control of all Eighth Air Force units on the continent other than those belonging to the VIII Air Force Service Command, and to assume operational control

AUTHORIZATION FOR
REPRODUCTION OF SC COMING
EIGHTH AIR FORCE
MATERIALS *2000*
DATE *2/12/00*



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TAYLOR ONLY
— SUPPLY A MAINTENANCE

EB Stevenson
Lt Col USAF

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NO 72 - 250th Bomb Sq of the 432d Bomb Grp is attached to Pittsburgh and Kalamazoo.

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of the two continental fighter groups.^{*18}

With a relatively large area of the continent in Allied hands, many disabled aircraft which otherwise had to risk the hazardous flight back to England or land in German-occupied territory were free to land behind Allied lines. Certain fields and landing strips were assigned to the Eighth Air Force for landing disabled planes or those which had wounded crew members on board,¹⁹ and a standard operating procedure was published²⁰ relative to the recovery of aircraft and the prompt return of crews.

In this way attrition of personnel and planes was noticeably decreased and the Eighth Air Force was able to operate through the end of the war at a much higher level of efficiency. Since D-day or shortly thereafter, small VIII Air Force Service Command units had been sent sporadically from England to France to repair Eighth Air Force planes which had made forced landings there. By September 1944 this work had increased to such proportions that it was necessary to establish a permanent service command installation. Consequently, in October and November the VIII Air Force Service Command Service Center was built up, and in December 1944 a complete air depot group was transferred to the service center, which at that time was functioning as a strategic air depot. On 2 January 1945 the center was redesignated the 5th Strategic Air Depot and located at Merville, France, while Headquarters VIII Air Force Service Command (Advance) was established at Brussels, Belgium. From the beginning of VIII Air Force Service Command operations on the continent through 31 December 1944, 151 aircraft were salvaged and 366 repaired, of which 361

* These two fighter groups were for a short time under the control of the control of the Ninth Air Force. (See Air Staff SHAEF, Report on Allied Air Operations 1 Oct. 1944-9 May 1945, p. 6.)

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²¹
were returned to England.

Throughout this organization and reorganization the strategic bombing offensive proceeded apace, systematically ravaging Germany--and the Luftwaffe--according to a varying set of target priorities. With oil, transportation and communication, and counter-air receiving the greatest effort in that order, by March 1945 the Air Staff in Washington could say "that as the disintegration of Germany proceeds apace ... perhaps there are no longer strategic targets but only tactical targets and targets of opportunity."²² On 10 April in a message from SHAEF the following statement appeared: "I understand it is agreed that the primary object of the Strategic Bomber Force is now to give direct assistance to the land campaign";²³ in Directive No. 4 for the strategic air forces in Europe, dated 13 April 1945, the primary mission of the strategic air forces is defined in the same terms. Before the end of April, two of the priority assignments--transportation and counter-air--were brought to a successful close,²⁴ so that toward the end of the war the Eighth Air Force turned more and more to tactical operations, although, as the following study shows, this type of air warfare was seldom absent from the Eighth's mission reports at any time after D-day.

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Chapter II

"OVERLORD" AND "NEPTUNE"

On 15 April 1944 AEAFF headquarters issued the over-all air plan for the employment of all Allied aircraft in support of the forthcoming invasion of western France (OVERLORD). Between the inception and the final publication of the plan there were months of intensive planning and study by the commanders of each of the principal air, ground, and naval forces under the direction of General Eisenhower, as well as even more detailed preparation by committees of staff representatives and technical experts.¹ The basic joint plan of the invasion operation as a whole, designed to direct all subordinate planning, was prepared by 21 Army Group,* Allied Naval Commander Expeditionary Force (ANCF), and Allied Expeditionary Air Force. Detailed plans for the approach, the assault, and the period immediately following the assault, until 21 Army Group headquarters landed on the Continent, were the responsibility of the U.S. First Army, ANCF, and the joint tactical air forces, who did their work in London. In addition, the joint TAF's and 21 Army Group, with advice from ANCF, concurrently began projecting post-invasion operations, just as 1st Army Group and Ninth Air Force looked toward the stage when the 1st Army Group would be established on the Continent.²

The over-all air plan of 15 April, which was the ultimate product of these various planning staffs, gave to the air forces the following

* 21 Army Group, General Montgomery's headquarters, had control of both British and American ground forces for the initial phase of the invasion and was charged with the responsibility for coordinating the over-all plan for that phase.

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assignments:³

- a. To attain and maintain an air situation whereby the German Air Force is rendered incapable of effective interference with Allied operations;
- b. To provide continuous reconnaissance of the enemy's dispositions and movements;
- c. To disrupt enemy communications and channels of supply by air attack;
- d. To support the landing and subsequent advance of the Allied armies;
- e. To deliver offensive strikes against enemy naval forces;
- f. To provide air lift for airborne force.

The meeting of the operational planning committee, set up by AEAFF to actively control the application of the air plan, were attended only occasionally during the early period of OVERLORD by a representative of Eighth Air Force. From 15 April, however, when the strategic air forces formally came under the control of the Supreme Allied Commander, until 25 May the Eighth Air Force representative attended 29 meetings, during which the details of the Eighth Air Force part in the program were largely completed. At the request of Air Chief Marshal Sir Trafford Leigh-Mallory on 29 May 1944, this same representative was appointed as a regular member of the planning group by the Eighth Air Force and was in attendance day and night at Stanmore until 30 June 1944.⁴ Final coordination of the air activities was achieved by informal meetings among representatives of the various commands, after SHAEF had granted permission to USSTAF and the Eighth Air Force to deal directly with American and British Army staff officers. Daily meetings of air force commanders at AEAFF headquarters were started on D minus 3 and continued throughout the critical phase of the invasion.⁵

Planning Problems

When OVERLORD was mounted, the requirements for air cooperation in the

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invasion became paramount. Although the Ninth Air Force was the American tactical air force, it could not furnish all of the bombing aid required in the earlier phases of the invasion, and for this reason the Eighth, whose operations had been wholly strategic heretofore, found itself committed to tactical air operations in cooperation with the ground assault. In June 1943 the Combined Bomber Offensive had been launched with the German Air Force as first priority objective, a strategic scheme directed toward attaining air supremacy prior to OVERLOD. With the advent of D-day, however, the mission of the Eighth Air Force became largely tactical: in fact, only two strategic missions were flown between 2 June and 17 June 1944. After the latter date the Eighth played a dual role, continuing with its tactical aid when called upon but reverting with most of its power to the main mission of strategic bombardment of Germany.

The specific objectives of the Eighth Air Force in terms of the OVERLOD air plan were many and varied. Air cover had to be provided for the invading ships and the landings; coastal defenses and batteries in the beachhead areas had to be pounded; the German Air Force was to be rendered ineffectual; railroads, bridges, roads, and communications had to be knocked out; supply dumps had to be demolished; continuous reconnaissance of enemy movements and dispositions was necessary; ground forces needed to be directly supported in combat; and airborne forces had to be escorted and had to be supplied by air once they were dropped.

The change-over from strategic to tactical operations presented many new problems for the Eighth Air Force--in addition, of course, to the everpresent one of weather--so that practice exercises and experiments were necessary to provide solutions and settle points of dispute between

air and ground commanders. Indeed the over-all operation was of such paramount importance that rehearsals of certain features of the program were undertaken to assure successful performance.⁶ The problem in general may be separated into three major categories which reflect the difficulties involved in the various stages of any mission--but magnified here because of the tremendous importance of the operation and the novelty of the Eighth Air Force role.

After the target for the mission was designated--in this case close support of the beach assaults--extensive research was conducted to determine the most effective types of bombs and fuzings to be used. The AEAFF weapons committee, which included four representatives of the Eighth Air Force, was established to provide the solution to this problem; several practice bombing missions were conducted, the most comprehensive being Operation BUNSEN on 26 April 1944. As a result of the tests, it decided that fragmentation and 100-pound GP bombs would be most effective against troop concentrations, vehicles, wire entanglements, and unemplaced gun positions.⁷ Certain categories of targets, however, besides those close-in, were not satisfactory for heavy bomber attack, according to Eighth Air Force headquarters. In addition to complicating the bomb-loading question these targets also drained an effort needed to support the assault itself, and were subject to political protest from the French. In three separate instances--the proposed bombing of marshalling yards, bridges, and chokepoints in French towns--the matter was submitted to SHAEF for final determination. In all three cases SHAEF, motivated largely by military expediency, directed that the

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attacks be made, but that the Eighth Air Force arrange to drop warning leaflets in advance to the French towns that contained these tactical targets.⁸

In addition to these pre-mission considerations the crew briefing itself involved danger to the secrecy of the whole of OVERLORD. As a precaution the Eighth Air Force decided to withhold from the crews as much information as possible until the regular premission briefing. One exception was made, however--in the case of Pathfinder* navigators and bombardiers, who were specially briefed some days in advance of D-day. The extreme importance of avoiding premature bomb releases was emphasized because of the tremendous Allied assemblage offshore. In addition, to ascertain as quickly as possible the effect and progress of the initial land and air assault, a system of tactical reporting was set up by which preliminary reports were to reach Eighth Air Force headquarters within 45 minutes after the first landings, and detailed intelligence reports within two hours. A comprehensive staff coordination trial (BLARNEY) was run on 14 May 1944 to test this system.⁹

Of vital import to the exact establishment of H-hour was the accurate determination of the earliest and the latest hours practicable for visual bombing. Against simulated targets in England, the Eighth, Ninth, and RAF Second Tactical Air Force participated in visibility trials designated BATSEYE. Results of this operation were forwarded to AEAH headquarters on 24 May 1944 and were used in helping to decide the hour of assault.¹⁰

* Aircraft carrying blind-bombing equipment.

Perhaps the most difficult job among the participants in OVERLOAD was that of the strategic aircrews who now were expected to perform--and to perform unerringly--a tactical assignment. Close-in air cooperation with ground forces required a knowledge of and experience in procedures, equipment, and techniques seldom, if ever, used in strategic operations. To add to this difficulty the demands of the counter-air campaign, POINTBLANK, and the anti-V-weapon offensive, CROSSBOW, encroached on the increasingly short time left for tactical practice before the invasion was mounted. In spite of these demands--and the weather--some training was carried out, although it fell far short of the minimum desirable for such a drastic change of employment.¹¹

Closely connected with the training problem was the determination of weather conditions and the consequent consideration of various blind-bombing techniques, many of which, fortunately, were familiar to the weather-plagued Eighth Air Force. The relative merits of both H2X and GEE-H* equipment were carefully studied, and on the basis of operational experience and supplemental tests the former was selected, although the latter was more accurate for land-area targets. This decision was made largely on the basis of the lower range error of H2X when the target was so located that water and land appeared simultaneously in the scope at right angles to the line of approach. Since in such instances the land-water definition was particularly clear with H2X, this was an important factor in the ultimate selection of a north-south bomb-run over the invasion beaches--with the land and water mass at right angles to it.

* For a lucid explanation of navigation and blind-bombing aids, see Marshal of RAF Sir Arthur Harris, Bomber Offensive (London, 1947) and Hugh Odisham "Radar Bombing in the 8th Air Force," prep. under supervision of Radiation Laboratory Hist. Office.

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In addition, GEE-H was limited in supply at the time and the accuracy that would be sacrificed in large formations led by only a few Pathfinders was not considered sufficient justification for using the more efficient (individually) device: equipment failures on a few of the GEE-H Pathfinders could jeopardize the success of the whole invasion bombing operation.¹²

With the preliminaries thus largely decided upon there still remained the problems inherent in the actual flying of the mission—especially in view of the large number of aircraft to be used. The initial bomber program on D-day necessitated take-off and assembly during the hours of darkness on a unprecedented scale. It was believed that the use of radio aids, flares, and navigation lights would insure success and safety, but it was considered advisable to have a trial operation on 1 May 1944 prior to a regular bombing mission. The exercise was completed satisfactorily, and on the basis of this test the six-plane squadron was adopted for the D-day missions, as well as a system of zoning assembly areas by searchlight arrangements.¹³

Once assembled and on their way, however, the formation faced another problem, potentially more hazardous perhaps than the night rendezvous: the possible inability of Allied surface units to distinguish immediately between friendly and hostile aircraft. Prohibited zones for all types of aircraft except fighters on shipping patrol* were established, principally over the shipping lanes and assault area, thus allowing naval and ground forces unrestricted freedom to fire at all other aircraft flying

* P-38's were used in this assignment because of their easily recognizable shapes.

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from the direction of the assault area or the Pas de Calais. In addition, for Eighth Air Force fighters distinctive markings were adopted, which consisted of wide black and white stripes painted on the wings and fuselage. The converse problem of defining areas for combat aircraft in order to avoid bombing and strafing within friendly lines was largely overcome by the adoption of a bomb line. Ground forces were not allowed beyond this line and targets there could be attacked by aircraft at will; no bombing or strafing was to be conducted behind this line without specific arrangement with the ground forces, and the originator of such a request was to assume the responsibility for clearing the area around the targets designated for attack. Closely connected with such requests from ground commanders was the necessity for army planners to adjust their projects to the bombers' capabilities. When requests for destruction of certain fixed defenses, demoralization of front-line troops, delay of enemy reserves, and/or blocking of transportation by the bombing of French towns were submitted by Army commanders, it was urgent that the commander point out the probable degree of success against each type of objective and then to secure priority ratings so that the available bomber strength could be apportioned as desired by the ground forces. It was generally agreed, however, that the air support should aim primarily at the demoralization of front-line troops, with a possible bonus in the destruction of barbed wire and other beachhead obstacles.¹⁴

Eighth Air Force Plan for Heavy Bombers

Eighth Air Force operations for the period D minus 3 through D minus

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1* were to be twofold in nature: final attacks against rail junctions and airfields and missions against coastal and CROSSBOW installations.¹⁵

According to the Eighth's Cover Plan, which was designed to conceal the points at which the ground assault was to be launched, a majority of the targets designated were along the Pas de Calais coast, the intention being to suggest landings in that area. The entire weight of the attack would be shifted to the actual assault area only if the element of surprise were definitely known to be lost. The idea of deception was all-important and outweighed the recognized fact that actual damage to coastal defenses would be, for the most part, negligible.¹⁶ Since during this short period prior to D-day bomber forces were to be carefully conserved in order to maintain the necessary strength for the comprehensive D-day program, the daily operations were to employ only 50 per cent of available strength, with one important exception: if visual conditions prevailed over Germany on either D minus 3 or D minus 2, 100 per cent of available effort was to be expended--40 per cent against the usual tactical targets and 60 per cent against strategic objectives within Germany. The latter mission was designed as a final effort to contain enemy fighter strength for defense of Germany until the last possible moment before the actual landings.

The most important and by far the most elaborate plans concerned the first mission of D-day, which involved attacks immediately prior to H-hour against 45 coastal installations between the Orne and Vire estuaries on the Normandy coast. This six-mile strip included four of the five assault

* These designations and others similarly used in this section are those stipulated for the earlier D-day, 5 June 1944.

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beaches: the American beach, OMAHA, and the three British beaches, GOLD, JUNE, and SWORD. Ninth Air Force medium bombers were detailed to the other American beach, UTAH, immediately adjacent to OMAHA beach and extending approximately from Isigny to Montebourg. Bombing was to begin at the high-water line on the beaches and extend inland three to four miles. The Eighth Air Force insisted on a 1,000-yard clear zone, with landings on the beaches to begin five minutes after completion of bombing. Under these conditions, the air forces informed the Army, as many as 8 per cent of the bombs might drop in the area of the assault boats; the risk was accepted by the Army.¹⁷

Some 1,350 heavy bombers were to participate in the first mission, flying in squadrons of six aircraft each. Following the carefully devised system of predawn assembly, the aircraft were to fly mapped courses to the target area, bomb in successive waves until H-hour, and thereafter attack secondary targets well inland. Although demoralization of enemy front-line defenders and disruption of communication lines were the sole aims of the pre-assault bombing, it was understood that only a small percentage of the actual targets would suffer direct hits and smaller still would be the number seriously affected. Bomb loadings decided upon were 100-pound GP, 120-pound fragmentation, 500-pound GP, and 1,000-pound GP, the latter for installations well clear of the beaches.¹⁸

Two plans of operation had been prepared, one for visual bombing and the other for bombing through an overcast. When it became increasingly apparent that weather conditions would necessitate the latter, which involved navigating by radar fixes and bombing by H2A, further precautionary measures were taken to prevent bombs from falling on friendly troops.

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The time interval between the cessation of bombing the immediate beach areas and the touchdown of the initial assault waves had already been increased from 5 minutes under the visual bombing plan to 10 minutes under the bombing-through-overcast plan. Similarly, in conjunction with AEAH headquarters it was decided that if cloud cover should prevent visual synchronization, bomb release by the formation would be delayed after the Pathfinders' drop signals so that the mean point of impact would be no less than 1,000 yards from the forward wave of the assault forces. The probability that bombing-through-overcast methods would be used led to the further decision to fuze all bombs except a small percentage of the 100-pounders with instantaneous nose fuzes, in order to avoid possible cratering of the landing beaches.¹⁹ In addition to the exigencies of H2X operation and the necessity for a carefully planned route to the target, the north-south bombing run was also favored because of less exposure to enemy antiaircraft fire before reaching the bomb-release line as compared with a bomb-run along the east-west shoreline or from the landward side. After bombs-away the bombers were to execute a right turn and withdraw to the west of the Cherbourg peninsula to prevent interference with later attacking waves that would be approaching the beach area from England.²⁰

Immediately following the initial assault phase additional missions were to be flown in support of the landing operations against targets outlined in the over-all air plan, especially transportation chokepoints and Normandy lines of communication. Weather, photo, and visual reconnaissance missions, special supply operations to the French Forces of the

Interior (FFI), leaflet-dropping sorties, and radio-countermeasure flights were also to be undertaken by the Eighth Air Force in conjunction with the over-all ground and air activities.²¹

No exact schedule of post D-day operations could be prepared in advance, since the progress of the ground forces and the nature of the enemy's reaction would be the determinants; certain general features of the program, however, were decided upon, and detailed target information on virtually all known potential tactical objectives in northern France received the necessary distribution sometime before D-day. Attacks were to be continued against road and rail transport facilities (including bridges on the Brest peninsula and across the Loire River), Luftwaffe airfields, and concentrations of enemy reinforcements and supplies. Requests for specific attacks were to be forwarded by the most expeditious means from AEF headquarters to the Eighth Air Force, since it was anticipated that a number of the operations would have to be undertaken on very short notice. The length of the interval before the Eighth's return to strategic bombing was dependent entirely upon the degree of success attained by the ground forces, and it was recognized that even after the need for continual support by heavy bombers had passed, there would be periodic demands for tactical operations.²²

Eighth Air Force Plan for Fighters

No great change from the normal supporting role of Eighth Air Force fighters was required until D-day itself. Early in 1944, following substantial increases in fighter strength, the policy of executing strafing attacks after completion of escort duties had been initiated. These

attacks became an accepted adjunct to high altitude escort and because of the tremendous scale of activity provided the best possible training program for ground-support missions. On days when no heavy bomber operations were scheduled, it was often possible to dispatch the fighters on independent bombing and strafing missions, some against transportation targets and some on experimental attacks against airfields and bridges. Thus, to a large degree, experience gained from operational missions provided the necessary training and background for the OVERLORD fighter ground-support program.²³

The mission assigned VIII Fighter Command for D-day was threefold. The first phase involved indirect fighter support (area type) for British and American bombers and airborne forces operating throughout the day in the vicinity of the assault area. The second phase was the prevention or delay of all types of enemy movement toward the assault areas by attacks on both mobile transportation and fixed installations. The general area assigned for these attacks was bounded on the south by the Loire River, on the north by a line from Granville through Vire, Flers, Argentan, Evreux, and Rouen to Paris, and on the east by a line from Paris to Orleans. Target priorities were prescribed in the following order: rail transportation, road transportation, ammunition dumps, troop concentrations, and airfields. The third phase was designed to furnish protection for Allied shipping throughout the day. Four P-38 groups were to operate under the Combined Control Center, as provided in the Joint Air Plan of IX Fighter Command and RAF 11 Group, with the formation of detailed plans for the execution of the other missions left to the discretion of the Eighth Air Force.²⁴

There were to be three periods during D-day when bombers or airborne forces would operate--in the early morning, at midday, and in the evening. In order to support these adequately and at the same time to maintain continually the interdiction commitment--strafing and bombing of ground targets--it was decided to employ approximately two-thirds of the available fighters during each of the three critical periods and one-third in the intervals between these periods. Three separate plans were therefore devised and coded as follows: FULL HOUSE for the morning missions, STUD for the midday missions, and ROYAL FLUSH for the evening missions.²⁵

FULL HOUSE was to provide indirect fighter support for RAF night bomber withdrawal and to furnish protection for the airborne forces of IX Troop Carrier Command and the RAF troop transport units, as well as for Eighth Air Force heavy and Ninth Air Force medium bombers operating against targets in the assault area. The VIII Fighter Command was expected to furnish cover from 0425 hours until the withdrawal of the bomber forces at approximately 1000 hours. The plan further provided for constant patrol of 14 designated areas, so located as to form a screen around the perimeter of the Allied assault area, and the cross-channel approach and withdrawal routes of the Allied air forces. Group and squadron leaders were to deploy their forces in depth at altitudes of 8,000, 12,000 and 17,000 feet, and between the time of their arrival and 1000 hours they were free to attack ground targets. At no time were the fighters to enter the assault area unless enemy activity made it necessary, and the groups--except for the P-38's furnishing cover for the invasion forces--were warned not to cross the sea approaches to the assault area at any time. The purpose of these restrictions was to

prevent congestion in the air and at the same time to simplify the aircraft identification problem of the naval forces.²⁶

STUD, to be executed after the completion of FULL HOUSE, was primarily designed to further VIII Fighter Command's role of preventing or delaying enemy movement toward the assault area. Thirty-seven squadrons of fighter-bombers were detailed to attack targets of opportunity in 15 designated area from 1045 to 1530 hours, each squadron to operate in its assigned area for 60 minutes. Eight aircraft within each squadron were to execute bombing attacks while the remainder furnished top cover. This arrangement would enable the fighters also to provide indirect support for heavy bombers of the Eighth Air Force which would be attacking targets in Caen at 1330 hours. The same restrictions in regard to entering the assault area and following the routes specified in plan FULL HOUSE were to be in effect.²⁷

ROYAL FLUSH was planned to provide indirect fighter support for airborne forces of IX Troop Carrier Command, RAF troop transport units, and heavy bombers of the Eighth Air Force, all operating against the assault area from approximately 2000 to 2200 hours. This plan provided for offensive patrols by nine two-squadron P-47 and P-51 groups in designated area on the perimeter of the assault area. Group and squadron leaders were to deploy their units for interception of enemy aircraft in the air as well as attack on ground targets. In addition to the area patrols, two P-47 groups were to operate on radar ground control in the vicinity of Rouen and Beauvais.²⁸

The four P-38 groups of the command were committed from 1600 hours

on D minus 1 until relieved to furnish fighter cover for Allied shipping during daylight hours. On D minus 1, three groups from IX Fighter Command were also to participate, and thereafter two from that command. From D-day on, these groups, under the control of the combined control center which formulated all plans in regard to their employment, were to maintain patrols constantly from 0430 hours to 2330 hours. Four areas were designated and a time schedule established which provided for one squadron to cover each area in 90-minute shifts. The importance of adhering closely to the specified arrival and departure times was emphasized in order that fighter protection would be continuous. The P-38's were assigned this particular role because of the readiness with which they could be identified and because of the low altitudes at which the patrols were to be flown (the P-38 was considerably less effective at high levels than other types of fighters).²⁹

With these elaborate preparations made as completely as possible in the time allotted, the Eighth Air Force awaited NEPTUNE D-day. The greatest attack ever attempted by a single air force was carried out by the Eighth on that day, 6 June 1944: every aircraft able to leave the ground had a part in the operations, some heavy bombers flying two missions during the day, while fighters flew as many as four and five. After this initial mass onslaught, the Eighth flew all kinds of tactical missions aimed at speeding the progress of the great land armies. Indeed, in spite of poor flying conditions and operational or planning difficulties, the Eighth Air Force sent up so many missions that ground crews originally set up to service 35 heavy bombers or 48 fighters had to service from 64 to 73 heavy bombers or from 96 to 112 fighters. They

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worked 14 to 18 hours a day to have a maximum number of aircraft ready for missions on the following day. On 20 June, however, General Doolittle relieved this situation by authorizing a return to 60 per cent availability rather than the maximum availability which had prevailed from 2 June.³⁰

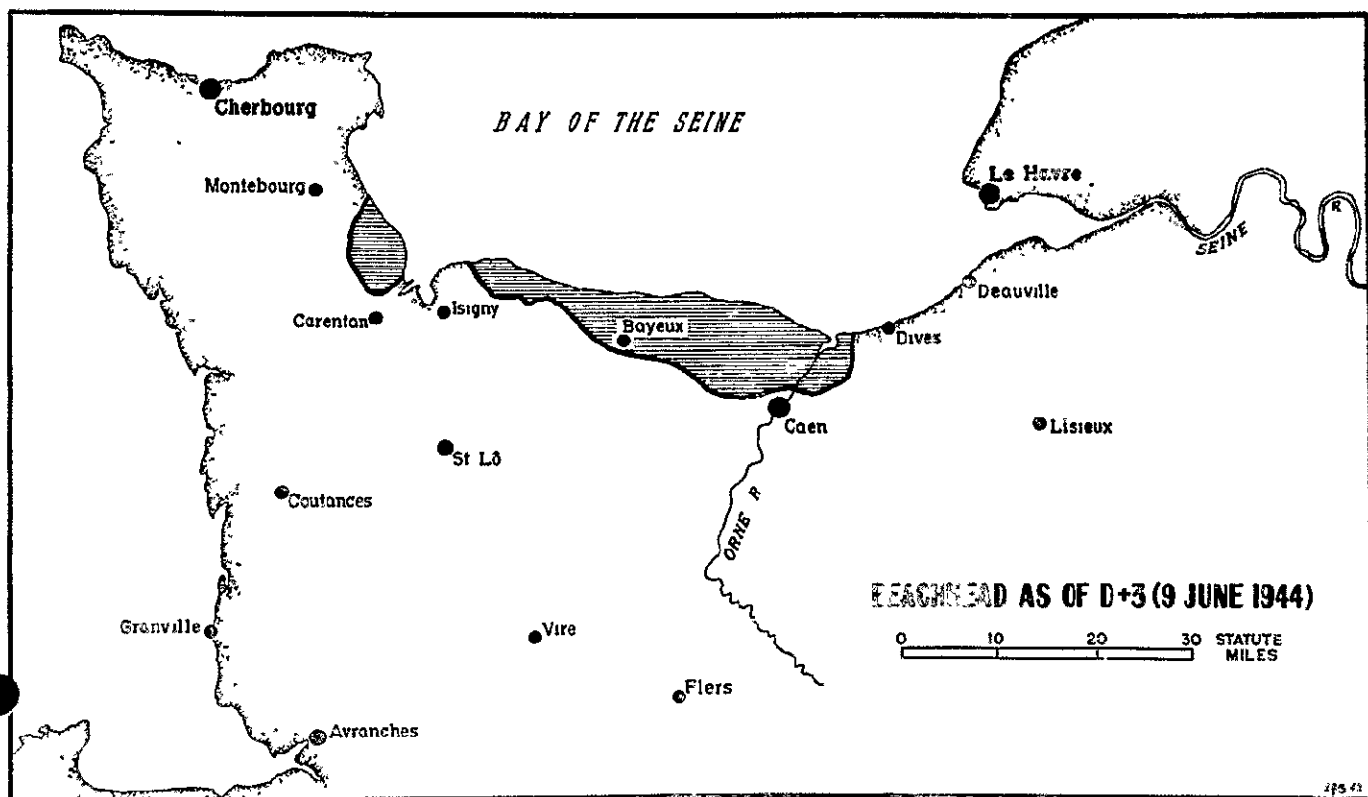
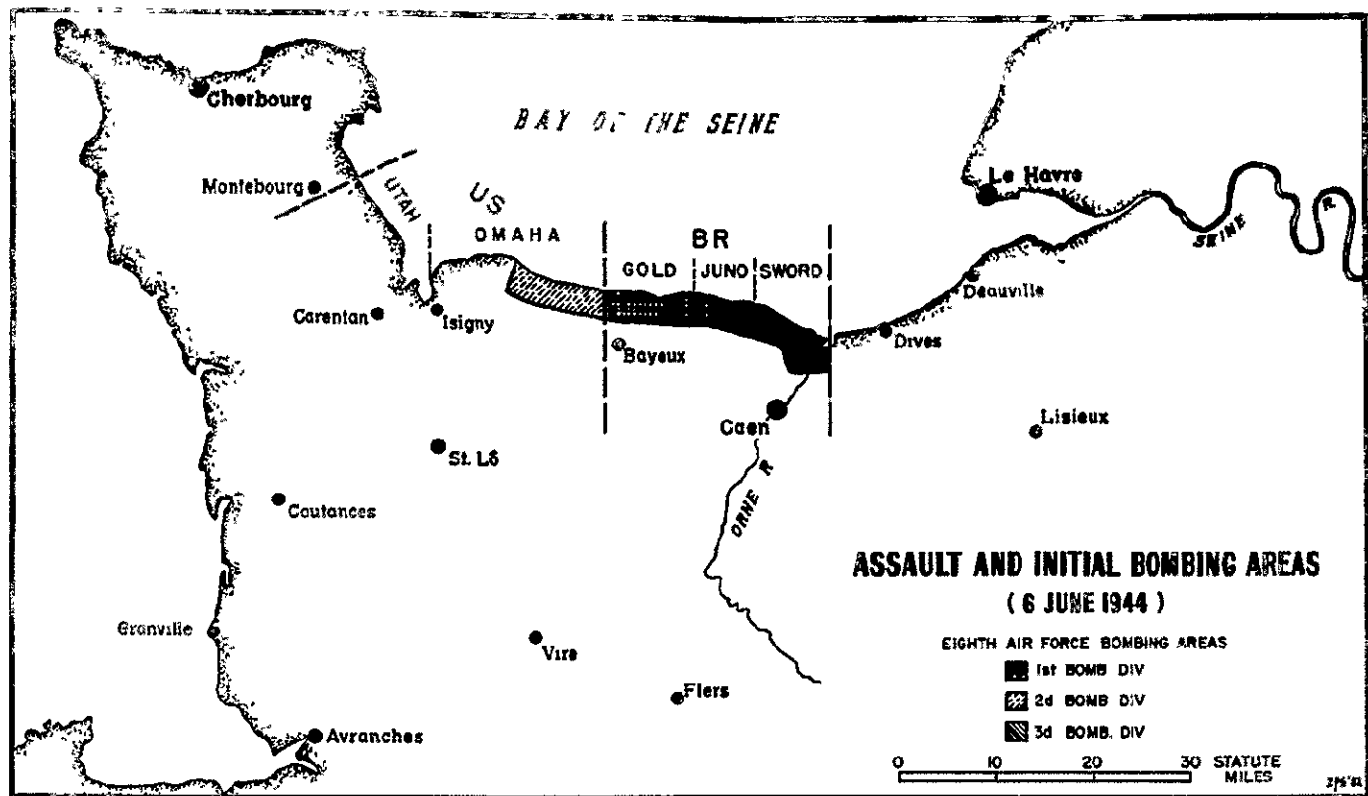
NEPTUNE D-Day

On 6 June, preceded by an overwhelming air and naval bombardment, Allied airborne and seaborne forces landed on the coast of France along a wide front between Ouistreham and Varreville to launch a full-scale assault on the enemy. Just after daybreak the more than 4,000 ships with several thousand smaller craft had made the rough crossing, covered by naval bombardment and aided by mine sweepers which helped clear the Channel. An unprecedented aerial umbrella guarded the invasion and warded off the few German aircraft which attempted to interfere.³¹

The first mission of D-day in support of the beaches was undertaken by 1,361 heavy bombers of the Eighth Air Force, 1,198 against beach installations and 163 against Caen.* After the take-offs, ranging from 0155 to 0529 hours, the predawn assembly of six-plane flights was eminently successful, except for three flights which could not make contact with the H2X leaders. In climbing through the overcast, a number of

* Figures used in the tactical operations described in this chapter are taken for the most part from "Eighth Air Force Tactical Operations in Support of Allied Landings in Normandy, 2nd June-17th June 1944." For later chapters, however, the figures are taken from Eighth Air Force Intops Summaries, except where another source provides a particularly useful breakdown. Since other accounts vary considerably, the Intops Summaries figures are used almost exclusively unless there is some reason to doubt them, in which case unit mission reports were examined. Because of the discrepancies in available figures, it is impossible to assume that those cited are always entirely correct; the margin of error,

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aircraft became separated from their units, but they were able to form on to other flights, all of which adopted the six-squadron abreast formation behind the designated H2X Pathfinder aircraft. Of the planes taking off, 1,083 heavy bombers actually attacked, 1,015 pounding assigned beach installations and 47 hitting Caen. In addition, 21 others, unable to locate the H2X leaders and lacking Pathfinder aircraft, struck at various alternate targets; thus, the total tonnage dropped on the mission amounted to 2,944.³² The 2d Bombardment Division began the day's operations for the Eighth by dispatching, between 0555 and 0614 hours, 329 B-24's against the Omaha beach area. They struck defended localities* at Pointe et Raz de la Percée, Vierville sur Mer, St. Laurent sur Mer, Colleville sur Mer (a strongpoint at Port en Bessin), and other targets. From 0658 to 0730 hours, 385 B-17's of the 1st Bombardment Division struck GOLD beach area and the western sector of JUNO beach area, dropping bombs on coastal batteries[†] at Longues, Arromanches, Ver sur Mer, and Mont Fleury; on strongpoints at Arromanches, Le Hamel, Ver sur Mer, Mont Fleury, La Riviere, and Courseulles-sur-Mer; and on a rocket emplacement at Meuvaines. An additional 47 B-17's from this bombardment division (the 303d and 384th Bombardment Groups) struck at chokepoints in Caen. At

(continued) however, is considered negligible in most cases.

* "Defended localities" were those protected by 20 to 40 men with machine guns, 2- or 3-inch mortars, or with antitank or field guns. Usually they contained underground concrete shelters, pillboxes, and weapon pits.

† "Coastal batteries" consisted of three to six guns and concrete emplacements with observation post and shelters for gun crews; 3- or 4-inch guns with range up to 19,000 yards were considered light batteries, and 4½- to 7-inch guns with range up to 26,000 yards were considered medium batteries. Battery strength ranged from 100 to 150 men.

almost the same time 322 B-17's of the 3d Bombardment Division covered the eastern sector of JUNO beach and the SWORD beach area, bombing strongpoints at Petit Enfer, Lion-sur-Mer, Ouistreham, and Merville-Franceville-Plage; coastal batteries at Moulineaux, Colleville-sur-Orne, and Ouistreham; two battery headquarters at Tailleville and St. Aubin d'Arquenay; and other targets.³³

Because strike photographs were cloud-obscured and because both air and naval forces poured an enormous amount of firepower into the assault areas, it was impossible to assess bombing results or to make any definite decision as to whether damage was caused by the Navy or by the air forces. This problem was further complicated by a delay in extensive examination of the bombing results during which much ground fighting took place to change the bomb and shell patterns. Several investigating parties visited the beachhead for the specific purpose of assessing the Eighth Air Force bombardment, and after a survey of the ground areas, interviews with ground personnel, and interrogation of prisoners of war the consensus was that the immediate beach areas showed only limited evidence of bombing damage, but areas behind the beachhead ranging from 300 and 400 yards to three miles inland showed extensive evidence of concentrated bomb patterns. The principal contribution made by the Eighth Air Force, however, was the demoralization of enemy troops and the disruption of signal and transport communications, which hindered the immediate deployment of reserves.³⁴ There was no enemy air opposition to the bomber attacks, and opposition from ground defenses was negligible: only one bomber was lost to enemy action and there were few instances of battle damage, although three or four aircraft sustained severe damage in collision and landing accidents.³⁵

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Transportation chokepoints in towns immediately surrounding the assault area were the objectives of the second wave of D-day attacks, this one to be flown by bombers that had failed to execute assembly for the first mission. Although only one Pathfinder was available and the weather was unpromising, 528 bombers were readied for the mission since it was considered imperative to block the road and rail movements of the enemy.³⁶

Just as the first troops were hitting the beaches, leaflets were being dropped warning the population of the principal towns in the transportation target area of imminent danger of bombing. Bombing times were 0900 to 0910 hours for the 2d and 3d Bombardment Divisions and 0930 to 0940 for the 1st Division.³⁷ Primary targets were chokepoints at Thury Harcourt, Lisieux, Falaise, Villers Bocage, St. Lo, Coutances, Gerisy la Foret, and Caen. Because heavy clouds covered the primary target areas, however, and since there was but one Pathfinder on the mission, only three groups from the 3d Bombardment Division were able to bomb: 37 heavy bombers dropped over 109 tons of high explosive on Argentan, a secondary target, with undetermined results. There was no enemy aircraft opposition, but two bombers were lost in a collision.³⁸

The inability to bomb the important communications center of Caen because of bad visibility led to a decision to dispatch another formation against that key target.³⁹ Time over the target was designated as 1330 hours for 73 B-24's of the 2d Bombardment Division in six-squadron formation, each with a GEE-H Pathfinder in the lead. Fifty-six of these attacked, dropping 155.75 tons of HE, and although overcast conditions prevailed throughout the target area and one squadron failed to bomb because of an equipment failure in the GEE-H lead ship, strike photographs showed

bursts within the town of Caen, while reconnaissance photographs disclosed scattered items of damage (some, perhaps, attributable to other attacks). No enemy aircraft opposition was encountered, and there were no losses.⁴⁰

On the fourth Eighth Air Force mission of D-day, against transportation chokepoints in towns immediately south and east of the assault area, a total of 736 heavy bombers took off; assemblies were made with difficulty because of heavy clouds, as a result of which some bombers joined groups other than those to which they were assigned and two units abandoned the mission before leaving the English coast. Although some units were able to make visual attacks, others with inoperative F2X Pathfinders were forced to find alternative targets or return to base with their bombs. Of the 553 aircraft which dropped 1,568.5 tons of HE, 116 released on alternate targets, which consisted largely of primary targets assigned to other units. Results were good at Vire, Coutances, and Conde-sur-Noireau; fair at St. Lo, Pont-l'Eveque, Argentan, and Lisieux; and poor at Pontauhault and Thury Harcourt. There were no encounters with enemy aircraft and no bombers were lost.⁴¹

The VIII Fighter Command executed its three missions, FULL HOUSE, STUD, and ROYAL FLUSH, substantially as scheduled.* Very little enemy air opposition was encountered, and claims against enemy aircraft were correspondingly low: 24 destroyed and 8 damaged, of which, 15 destroyed and 6 damaged resulted from attacks on a formation of Ju-88's near the assault area. Additional claims of 4 aircraft destroyed and 6 damaged as a result of attacks on enemy airfields brought the day's

* See above, pp. 20-23.

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total to 28 destroyed and 14 damaged. Altogether VIII Fighter Command dispatched 1,949 planes on D-day and sustained the loss of 25, severe damage to 4.⁴²

Fighter-bomber attacks on D-day were executed against 17 railway and road bridges, 10 marshalling yards, 4 railway junctions and sidings, 3 convoys, a group of railway cars, a highway intersection, a tunnel, and a dam. The score came to 21 locomotives destroyed and 34 damaged, and damage to 216 trucks, 15 tank cars, 76 goods wagons, 19 armored vehicles, 2 barges, and 2 tugboats. In addition, 2 carloads of ammunition were destroyed and 85 trains strafed with unreported results, as was the case with numerous other targets: warehouses, radar towers, barracks, troops, artillery pieces, and staff cars.⁴³

D Plus 1, 7 June 1944

By the morning of 7 June the ground forces had attained a part of their D-day objectives: several beachheads had been consolidated, and in some areas advances up to 10 miles inland had been made. Even more encouraging was the badly disorganized enemy resistance. Not only had the Germans failed to develop any counterattack and shown little strength in opposing an advance made on a broad front by widely separated battalions, but their coastal defenses had not prevented a link-up between paratroops who had secured bridges across the Orne River canal and Allied troops who had penetrated inland from the coast. As a result Bayeux was captured by the British, which cut the main highway and railroad from Paris. American troops who landed farther west took the coastal towns to the northwest of Bayeux and advanced inland to

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join the airborne units previously dropped in that area. Still others, landing in the southeastern crook of the Cherbourg peninsula, pushed west and northwest to join the paratrooper units.⁴⁴

Air operations on D plus 1 were governed by tactical requirements of the ground forces, with AEAFF directing attacks against a road bridge at Laigle and chokepoints at Flers, Conde-sur-Noireau, Falaise, Alencon, Argentan, and Lisieux to delay the movement of enemy reserves and reinforcements into the assault area. The 1st Bombardment Division hit the first three chokepoints mentioned, while the others were taken care of by B-24's from the 2d Division. There were 467 bombers airborne, 174 B-17's and 293 B-24's, and all of the primary targets were bombed through the clouds except for Laigle (the one squadron assigned there returned without bombing because of Pathfinder equipment failure) and Alencon. The six squadrons of the 2d Division sent to Alencon, had incorporated incorrect GEE-H data into their preflight computations through a field order teletype error with the result that two of them bombed 40 miles northeast of the target; the others, however, realized their error in time and held their bombs, one squadron subsequently bombing on the markers of another formation and three squadrons returning without attacking. A total of 402 aircraft did attack with 1,169.9 tons of HE. Good results were obtained at Conde by the 1st Division and the first available reconnaissance photographs indicated good results at Argentan by the 2d Division, but these photographs also covered an operation by RAF Bomber Command on the night of 6/7 June. Fair to good results were obtained at Lisieux, only fair at Flers and Falaise. The bombers reported no enemy air opposition and only one B-24 was damaged--in a crash on take-off.⁴⁵

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In continuing the support of ground force activities, the second mission of the day was scheduled to take advantage of a possible favorable break in the weather and was directed against communications targets, including rail bridges, junctions, and repair depots, and an important German Air Force (GAF) base at Kerlin/Eastard near Lorient. The latter was selected for assault because of its use by GAF units specializing in reconnaissance and antishipping activities, while the attacks upon the rail targets were part of a comprehensive plan to destroy transport and communication facilities used by the Germans to supply and reinforce their front-line forces. There were 591 bombers airborne and although two groups were unable to form and abandoned the mission, the remainder succeeded in organizing a fair division assembly.

The combat wings of the 3d Bombardment Division assigned to Nantes found their targets and bombed as planned, but the 3d's targets at Angers and Tours were covered by drifting clouds, necessitating attack upon secondary targets or, as in the case of four groups which were unable to locate suitable targets, a return without bombing. Of the 591 airborne, a total of 498 bombers dropped 1,249.3 tons of HE. Good results were obtained by the 1st Division at Kerlin/Eastard, which was bombed with the aid of F2X Pathfinders, its location near the coast permitting easy identification on the scope; at Nantes results were good to excellent. Other targets attacked by units of the 3d Division included the Nantes bridges and rail junction, the road bridge at Montjean (severed at two points), and the marshalling yards at Niort,

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Vitre, Laval, and Chateaubriant. Although no enemy aircraft opposed the raids over France proper (the 1st Division sighted 20 to 25 enemy fighters near Lorient which did not offer combat), two enemy intruders, believed to be Ju-88's, intercepted a B-24 group over the latter's base, shot down four of the Liberators, and escaped without loss. During the entire day's heavy bomber operations only two were lost-- one B-24 to antiaircraft fire and one B-17 to unknown causes (the latter ditched in the Channel, but the complete crew was rescued). In addition, seven aircraft were irreparably damaged including the four B-24's shot down by enemy aircraft. The Eighth's crews made no claims of enemy aircraft destroyed or damaged.⁴⁶

During the early morning of D plus 1, VIII Fighter Command furnished area support for beach landings as well as for the heavy bomber operations. Simultaneously, harassing attacks on enemy communications were maintained, and the four P-38 groups (20th, 55th, 364th, and 479th) continued on shipping patrol. The first field order of the day provided for patrols from 0545 to 0645 hours by one squadron in each of seven sectors on the perimeter of the assault area. At the end of the one-hour patrols, the squadrons were to execute bombing and strafing attacks on ground targets. Two P-47 groups (the 353d and 56th) were assigned to prevent the enemy using the four main railway lines northwest of Paris; they divided into sections of eight aircraft to bomb rail transportation, tracks, bridges, and tunnels. The second field order assigned the 78th Fighter Group to two groups of Ninth Air Force B-26's from 0845 to 0930 hours for area support operations, after which the

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Thunderbolts were to strafe and bomb transportation targets of opportunity. Seven other P-47 groups were assigned as area support for eight combat wings of Eighth Air Force heavy bombers, according to the third field order. They were to arrive in designated areas at 1145 hours, remain until all bombers had crossed out of enemy territory, and then strafe and bomb targets of opportunity. Ten more P-47 squadrons were to deliver fighter-bomber and strafing attacks along four railway lines northwest of Paris against which they had operated during the morning. The final field order provided for additional area patrol for the Eighth's heavies and a bonus fragmentation bomb attack by the 78th Fighter Group on the Berlin/Eastard airdrome. One P-51 group which had been held in one-hour readiness during the day was also dispatched to bomb and strafe targets of opportunity in the Rennes area.⁴⁷

Air opposition on D plus 1 was considerably greater than on the previous day: a total of approximately 150 enemy aircraft, mostly single-engine, offered combat to the fighters. Aggressive when the advantage of both numbers and position were theirs, they struck in formations of from 15 to 38 aircraft, the aerial combats resulting in American claims of 31/1/13,* as compared to the loss of only 4 of the Eighth's fighters. Fighter-bombers raided 17 marshalling yards and sidings, 9 trains, 6 rail lines, 4 tunnels, 5 bridges, 5 convoys, 2 airfields, and 1 lock. During the whole day 1,592 fighters were sent up and 1,531 sorties flown, with total claims against the GAF amounting to 55/1/24 at a loss of 25 Eighth Air Force fighters.⁴⁸

* This conventional way of reporting claims means that 31 enemy planes were destroyed, 1 probably destroyed, and 13 damaged.

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D Flus 2, 8 June 1944

On this day ABAF planned to take advantage of the favorable weather for strikes against rail bridges over the Loire and on the Erest peninsula, key rail junctions and marshalling yards in the same area, and all GAF bases within operational range of the beachhead. Despite the fact that visual bombing conditions were expected, GEE-II Pathfinder aircraft were to lead the units detailed against bridges at Rennes, Fontaubault, and Vicomte sur Rance, and H2X Pathfinders were to be used as navigational aids by several other units. The bridges at Redon, Vannes, and Forcaro were assigned as targets for a small E-24 force equipped for using Azon- or radio-controlled bombs. This force, whose operations were highly secret, was testing the new weapon against bridge targets particularly, the peculiar technique of which required perfect weather conditions. In this kind of specialized operation it was necessary for the bombers to circle a target three times in order to release the radio-controlled bombs individually. When they found the Erest peninsula blanketed with heavy clouds, the Azon force abandoned the mission only to make a second attempt late that same afternoon. This was also abortive, however, when the Liberators, because of poor visibility, were not able to make contact with the 357th Fighter Group detailed as close support.⁴⁹ After several other similar "tests," General Doolittle on 19 June voiced his disappointment over the failure of the missions; later on, in July, it was agreed that additional tests in the Azon project be postponed, since Doolittle preferred not to risk compromising the security of the technique and the weapon by haphazard experimentation

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during the heat of current operations.

Although ground haze prevented four squadrons from taking off and a heavy overcast at operational levels necessitated immediate climbs to altitudes of 20,000 to 26,000 feet, 8 June saw 1,174 heavy bombers dispatched. In some instances it was necessary to designate emergency assembly points near the south coast of England because of the bad visibility, and several groups and squadrons, unable to make the formations, abandoned the mission prior to landfall over France. Of the 97 tactical units scheduled, 13 failed to take off or abandoned the operation before penetrating enemy territory, 56 bombed primary targets, 14 bombed targets of opportunity, and 14 returned with their bomb loads: a total of only 735 planes dropped 2,012 tons of HE with results which varied from poor to excellent despite the weather. At Orleans the 1st Bombardment Division achieved an excellent pattern but only poor at Rennes. The 2d Division had good results at Angers, where the rail line was bombed out in at least two places, and fair to good at Le Mans airdrome, where bursts extended across the north-south dispersal areas and hits were noted on main facilities and probably on a rail line nearby. This division's attack on Pontaubault was only fair, however, and at Vicente sur Rance poor, while the 3d Division was successful at all of its targets except Nantes.

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Enemy air opposition was reported by two bomber formations. In one instance a B-17 group was attacked on withdrawal near Mezidon by 15 FW-190's, but before any damage was done the GAF fighters were dispersed by RAF Spitfires which were in the area on another mission. In the other instance a B-24 squadron on the return trip was intercepted

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near the isle of Jersey (outside the designated Allied patrol areas) by 12 P-51's, which succeeded in shooting down one of the bombers before being forced to break off the engagement. Thus, during the whole day's heavy bomber operations, one B-24 was lost to an enemy aircraft and one B-17 and one B-24 to unknown causes, while six bombers were damaged; two GAF fighters were claimed as destroyed.⁵²

From VIII Fighter Command the 56th, 359th, 4th, 339th, and 361st Fighter Groups (besides the four P-38 groups still assigned to shipping patrol) were to fly area patrols in direct support of the heavy bomber operations, and afterwards to bomb and strafe targets of opportunity. Five fighter groups had previously worked over targets of opportunity in the same general area as the heavy bomber objectives. Although the main purpose of these strikes was to hit the enemy's communications lines, they were also considered as indirect support of the heavy bombers, since enemy fighter reaction which might otherwise be later directed against the bombers was expected to be provoked prematurely. This accounted for the relatively small number of groups employed on area patrols in direct support of the bomber forces. Other bombing and strafing missions were executed throughout the day, the last at 2130 hours. The entire command operated at near-maximum effort, with all available groups scheduled for second sorties and the majority of them assigned a third. One group was forced by weather conditions to abandon its third mission of the day, a fighter-bomber operation, and poor visibility prevented the group scheduled to support the afternoon Azon attack from making rendezvous with the bombers. The groups directly supporting the morning heavy bomber operations encountered

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very little enemy opposition, but claimed 10/0/1 with no losses of their own. Seven of those destroyed were struck by the 56th Fighter Group as the enemy planes took off from Illiers airfield. Fighters executing bombing and strafing attacks sighted approximately 130 enemy aircraft, most of which were operating alone or in units of two or three, and claimed 21/2/4 for a total day's score of 31/2/5 in aerial combat. The VIII Fighter Command dispatched 1,535 aircraft during the day's support and attack operations, 1,405 sorties were flown, and 22 aircraft were lost; total claims against the GAF on the ground and in the air were 46/2/9.⁵³

Fighter-bomber attacks were executed against 25 marshalling yards (including sidings and junctions), 13 bridges, 10 trains, 6 convoys, 3 airfields, 2 groups of barges, 2 radio towers, a transformer, a coastal gun, and a troop concentration. Nine attacks were also made on main railway lines. Claims amounted to 27 locomotives, 116 railroad cars, 216 trucks, 2 tanks, and 9 other vehicles destroyed, and 13 locomotives, 232 railroad cars, 87 trucks, and 8 other vehicles damaged.⁵⁴

D Plus 3 through D Plus 7

Unfavorable weather prohibited operations by Eighth Air Force heavy bombers on 9 June, and the fighters were proportionately restricted, with but one squadron of P-38's flying shipping control and another from the 357th Group (P-51's) escorting reconnaissance missions.⁵⁵ From 10 June through 13 June, however, air action picked up considerably. Targets were GAF airfields and landing grounds in France which had become active since the Allied landings; coastal installations in the Pas de

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Calais designed to prevent Allied troops in this sector from reinforcing those in the Caen and Cherbourg areas; and rail and road bridges in Driittany, Normandy, and other parts of northwestern France. The weather required the use of Pathfinder equipment every day, but some visual bombing was done through breaks in the clouds.

On 10 June, 589 of 873 bombers taking off attacked airfields and coast defense installations in the Pas de Calais with 1,397.7 tons of HE. Results on airfields were very good at Nantes/Chateau Bougon, good at Vannes and Conches, fair to good at Dreux, and fair at Gael, Evreux, Orleans, and Chateaudun. Fair results were obtained on the defended localities at Wimereux and Merlimont-Flare and the Berck-sur-Mer medium* coast battery; all others were nil. One B-24 was shot down by antiaircraft defenses at Evreux, and four were damaged.⁵⁶

Enemy opposition to fighter aircraft was limited, approximately 150 enemy aircraft being sighted during the course of the day. In one instance about 40 Me-109's carrying bombs were attacked at 300 feet by the 352d Fighter Group which claimed 3 destroyed and 2 damaged; none of the P-51's were lost. In another instance, the 78th Group on a fighter-bomber mission was attacked by approximately 40 Me-109's and FW-190's while on its bombing run, losing 5 of its number while claiming 5 GAF fighters destroyed and 2 damaged. With claims from other sporadic engagements, the day's total in aerial combat amounted to 21/0/8 at a loss to VIII Fighter Command of 25 fighters. Fighter-bomber strikes were executed against 31 marshalling yards, 19 bridges, 7 trains, 5 railroad tunnels, 7 convoys, an airfield, a gun emplacement, a supply

* See above, p. 25 n.

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dump, a power plant, a radar station, a group of tanks, and gasoline trucks, in addition to 14 assaults on main-line railroad tracks. ⁵⁷

On 11 June, 640 Eighth Air Force heavies bombed bridges along the Loire River and on the Irest peninsula, airfields and landing grounds in the Paris area and on the Frost peninsula, and defense installations along the Pas de Calais coast, releasing 1,673.8 tons of HE, approximately one-fourth of which was dropped on targets other than assigned primaries. Results were good on airfields at Conches and Cormeilles, fair at Farnay/St. Martin and Beauvais/Nivillers landing ground, Beaumont-le-Roger, Creil, and Beaumont-sur-Oise airfields. Excellent results were obtained at Blois/St. Denis (by the 2d Division) and Pontaubault bridges (by the 3d Division), poor at Merlimont-Flage defended locality and on the bridges at Vicomte sur Rance and Monfort, and nil on Forcaro bridge and other targets. One B-24 ditched in the Channel after being hit by antiaircraft fire from Creil, but five of its crew were rescued; two B-17's were lost to unknown causes. ⁵⁸

Enemy air opposition against VIII Fighter Command was scattered and very light: not more than 25 airborne GAF fighters were sighted during the day. The 55th Group on its second fighter-bomber mission of the day engaged 10 FW-190's and claimed 3/2/6 while losing 2 P-38's. The 356th Group of P-47's was attacked by six Me-109's and claimed two destroyed for no losses. Over-all losses for the fighter command were eight aircraft, with claims of five enemy aircraft destroyed, two probably destroyed, and six damaged. Fighter-bomber assaults were made against 27 marshalling yards, 19 bridges, 7 trains, 2 airfields,

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2 convoys, an oil tanker, a power station, and a group of warehouses; other targets, including staff cars, oil storage tanks, and barracks, were strafed.

On 12 June, German airfields and landing grounds in northeastern France and rail and road bridges on the Brest peninsula were the targets on which 1,278 heavy bombers were to drop 3,295.2 tons of bombs; 771.6 tons of this total, however, were unloaded on secondary and opportunity targets, mainly airfields or bridges. Good results were obtained on airfields at Amiens/Clisy, Montdidier, Roye/Amy, Beauvais/Tilly, Conches, St. Andre-de l'Eure, Evreux/Fauville, Vitre-en-Artois, and a landing ground at Lille; results were fair at Dreux, Lille/Vendeville, Cambrai/Epinoy, Cambrai/Niergnies airfields and Illiers-l'Eveque landing ground; and the attack on the Beauvais/Nivillers landing ground was listed as poor. As for the bridge targets, very good results were achieved by the 1st Bombardment Division on Pontaubault rail bridge, poor on Montfort road bridge and Floermel rail bridge, and nil on other targets. Of the nine bombers missing--six B-17's and three B-24's--six were shot down by antiaircraft fire, one was lost to Me-109's which attacked a B-24 formation near Rennes, and two were lost to unknown causes; three bombers also sustained severe damage. The aerial gunners claimed one enemy plane destroyed and one probably destroyed.

Enemy opposition against the fighters on this day was the heaviest since D-day. One group of P-51's (the 352d) on patrol engaged approximately 10 Me-109's which had attacked a formation of heavy bombers, chased them to the deck, and claimed 3 enemy planes destroyed for no

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losses. No other groups on patrol encountered enemy aircraft, but after the bombers had withdrawn, the 359th Group engaged eight FW-109's over Paris and claimed one destroyed for no losses. The 353d Fighter-Bomber Group, attacked by some 50 Me-109's, lost 8 of its planes in the ensuing dogfight as compared with claims of 5 Me's destroyed and 2 damaged. The 353d later flew into the Dreux-Evreux area to draw out the same enemy fighters, which were reported as experienced, aggressive, and skillful, but this time it was followed 30 minutes later by a second F-47 group, the 56th. This was done so that the fighter force would appear weak enough to the GAF interceptor units for successful attack; a system of control was established between the two groups so that their forces could be employed to the best advantage. The 353d group arrived in the area first and sighted about 20 Me-109's, which they pursued in the direction of Paris, only to meet another formation of approximately 40 Me's. In the battle that followed, the tactics employed by the enemy fighters indicated that they were from the same GAF unit which had inflicted the heavy losses on the 353d Group in the early morning. While this group was shooting down 9 Me-109's and damaging 3, the 56th arrived in the area as planned and immediately engaged 12 Me-109's which had just left the ground. As this segment of the air battle raged, 12 more enemy fighters appeared and joined in the melee only to have 7 of their number destroyed by the 56th Group. The latter suffered no losses at the hands of the GAF, but one F-47 crash-landed in Allied-held territory. Along with claims of other sporadic engagements, the final score for the day against the Luftwaffe was 26/0/10 as against the loss of 17 VIII Fighter Command aircraft.⁶¹

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Airfields, landing grounds, and rail and road bridges were selected for attack on 13 June. Dreux, St. Andre-de l'Eure, and Evreux airfields were raided by 128 P-17's of the 1st Bombardment Division which dropped 292.3 tons of HE with good results and no losses. On the second mission of the day, of 260 2d Division bombers airborne, 208 successfully attacked Beauvais/Nivillers landing ground, Floermel and Vicomte sur Rance rail bridges with 500.3 tons of bombs. Two B-24's were shot down by antiaircraft fire.⁶²

Enemy air opposition throughout this day was slight. The 361st Fighter Group on area support was attacked by 15 Me-109's and shot down 4 of them without a loss, the only other air action being between a small formation of Me-109's and the 78th Fighter-Bomber Group, which claimed two of the Messerschmitts destroyed. Of the two P-47 groups scheduled to strike Loire River bridges during the early morning, the 20th was prevented from attacking its primary target but bombed another bridge as an alternate target: four hits were scored on embankments at either end and on the bridge proper. The other group, the 55th, was prevented by clouds from making the bombing run as briefed but did manage to put one bomb on the center of the bridge. Altogether, during the day 817 fighter aircraft were dispatched and 782 sorties flown; score: 4 VIII Fighter Command aircraft lost, 6 GAF planes downed.⁶³

By the evening of the 13th the ground forces had expanded their beachheads as far as 20 miles inland at the point of deepest penetration, and were fighting along an 80-mile front extending in a long curve from Montebourg on the Cherbourg peninsula to Escoville, about 5 miles east of Caen. At this stage General Eisenhower summed up the situation for

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his troops in the following words: "Although the landing operation was attended by hazards and difficulties greater than have ever before faced an invading army, the first great obstacle has been surmounted."⁶⁴

D Plus 8 through D Plus 11

Although tactical targets were still of primary importance from 14 through 17 June, strategic operations were resumed on 14 June and continued on a rising scale thereafter. After the initial V-1 attacks on London on the night of 12/13 June, V-1 launching and supply sites, known as CROSSCOW objectives or NCPALL targets,* became major objectives for the Eighth Air Force, as well as the usual airfields, bridges, and transportation targets. Once again during this period the special B-24 force with Azon-controlled bombs was directed against the stubborn bridge targets. On 14 June, 15 of the specially equipped 2d Bombardment Division B-24's started out for bridges across the Somme, Canche, and Authie rivers; only one bridge was bombed, however, and the result was poor.⁶⁵

The other tactical operations found 1,375 bombers airborne, 1,192 of them dropping 2,854.6 tons of bombs. Results on airfields, where runways were cratered and 12 grounded aircraft destroyed, were good at Le Bourget, Creil, Orleans, Chateaudun, Florennes, and Erussels; fair to good at Eretigny, Etampes, Chievres, and Le Culot; fair at Coulommiers, Laon/Athies, and Lille/Vendeville; and poor at Melun and St. Trond. One of the missions, to airfields in the Paris area, provoked strong enemy reaction: approximately 100 German fighters were in the area, 40 of which pressed vigorous attacks against the bombers, the combat wings.

* See below, Chap. VI.

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of the 1st Bombardment Division assigned to Le Bourget bearing the brunt of the attack. The gunners claimed two enemy aircraft destroyed and two damaged.⁶⁶ Fighters in close and area support of these missions, claimed 4/1/7 GAF planes at a loss of 4 of their own. Four F-47 groups (the 56th, 78th, 353d, and 356th), unable to locate their assigned targets (motor convoys of two German Panzer divisions reported moving southwestward), attacked three airfields, two marshalling yards, an ammunition dump, and various other targets. The 356th Group was jumped by four Me-109's and claimed one damaged for no losses.⁶⁷

On 15 June many of the previous days' targets were reassigned and altogether 1,338 heavy bombers were airborne, 1,115 of these going against tactical objectives. A total of 1,021 dropped 2,896.2 tons of bombs, achieving their best results at Bordeaux airfield and assembly plant, where the landing ground was well cratered by the 1st Bombardment Division, extensive damage was done to hangars and workshops, and five parked aircraft were destroyed or damaged. Results at Etampes airfield, a secondary target, were good, at St. Cyr airfield fair to good, at Le Mans and Orleans fair, and at Guyencourt, Buc, and Toussus-le Noble airfields poor. At the hands of the 1st Division the Angouleme marshalling yards suffered very heavy damage to repair and maintenance facilities, rolling stock, and track, and each of the seven assigned bridges across the Loire was rendered impassable by direct hits which tore up the rails and in most instances severely damaged the structure of the bridge. The B-24 Azon force, however, failed once more to hit any of the three bridges it bombed. A formation of approximately 24 Me-109's,

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some painted with the black and white stripes used to identify Allied aircraft, made three attacks against the lead combat wing of the 2d Bombardment Division formation west of Paris; despite the defensive efforts of the escorting 339th Fighter Group, they shot down one B-24 and damaged another to the extent that a subsequent crash landing resulted. The gunners claimed five enemy aircraft destroyed.⁶⁸

All available fighter forces, with the exception of two P-38 groups still on shipping patrol, were detailed to close escort missions, with other groups assigned to cover portions of the route where enemy opposition was most likely. Only four groups reported sighting any airborne enemy aircraft and only the 339th and the 356th made any combat claims: five GAF planes destroyed and three damaged. The VIII Fighter Command lost three fighters, one to antiaircraft fire, one to accident, and one to unknown causes. Several strafing attacks were made on ground targets after completion of escort assignments, the 20th Fighter-Bomber Group gaining possible hits on one end of a bridge at Etaples.⁶⁹

With but 313 heavy bombers operative on 16 June (results generally poor or unobserved) and almost no Luftwaffe activity,⁷⁰ the fighter-bombers saved the day from oblivion by executing highly successful missions against stalled trains on the perimeter of the battle area. The 352d and 357th Fighter Groups strafed one troop train of six to seven cars between Angoulême and Foitiers and inflicted heavy casualties on enemy soldiers attempting to escape the coaches. External fuel tanks were then dropped on approximately 100 freight and passenger cars and 4 locomotives, followed by strafing attacks which started 4 large fires,

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The same tactics were employed by the 353d Group against rail transportation in St. Pierre marshalling yard, where 75 to 100 flat cars were set on fire, while south of Poitiers 30 additional freight cars were left in flames and an ammunition train was strafed and set on fire. Approximately 75 freight cars were strafed elsewhere by the 356th Group, with 10 claimed destroyed and numerous others damaged. The 352d and 357th Groups also damaged a railroad station and a power transformer; although weather conditions prevented the 55th Group from reaching the designated area, it was effective against targets of opportunity: two direct hits on a moving train destroyed the locomotive and derailed three cars. The locomotive of another train was destroyed and four cars were damaged. At St. Pol approximately 50 railroad cars were strafed after phosphorous and oil bombs had been dropped to start large fires. At two other marshalling yards some 90 railroad cars were bombed with good results, as were barges, tanks, trucks, an armored vehicle, and an antiaircraft tower and gun emplacement. Three P-38's, all from the 55th Group, were lost to antiaircraft fire.⁷¹

Weather conditions confined operations to northern France on 17 June, mostly airfield and landing-ground targets. Two missions were flown by the heavy bombers: 504 of them from the 1st and 2d Bombardment Divisions dropped 1,292.3 tons of HE with good results at Angers, Tours, Laval, and Essay, fair at Melun, Bretigny, and Guyancourt, and poor or nil at others assigned. The bombers were not opposed by enemy aircraft, but two B-17's were shot down by the Dieppe defenses and one B-24 was lost to antiaircraft fire at Tours.⁷² Close and area support for the two

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heavy bomber operations was furnished by VIII Fighter Command, but since enemy air opposition was very limited (11 airborne enemy aircraft were seen) only the 353d and 78th Fighter Groups made any claims: 2 FW-190's destroyed and 1 damaged in aerial combat; 3 Ju-88's were destroyed on the ground in low-level strafing attacks by the 361st Group. One P-51 from the 357th Group was lost to unknown causes. In addition to several rail and road targets two railroad bridges north of Paris were hit by the 20th and 55th Group fighter-bombers, the abutments at both ends of the one at Corbie completely destroyed, no visible damage to the other at Feronne. No enemy aircraft were encountered, but four P-38's were lost, three to antiaircraft fire and one to unknown causes. After completing its covering detail, the 339th Fighter Group bombed two marshalling yards with fair to good results, losing one plane, while two more were lost by the 479th Group in a fighter-bomber attack on marshalling yards and bridge targets of opportunity. Over-all claims against the enemy were five aircraft destroyed and one damaged in a day of 1,027 VIII Fighter Command sorties; eight American fighters were lost.⁷³

It is very difficult to make a final evaluation of the effect of tactical bombing by Eighth Air Force heavy bombers from D-day through 17 June, because of the complexity inherent in combined bombardment of identical targets by more than one unit and/or service. Thus, a number of targets bombed by the heavies in June had been hit by the Eighth and/or other air elements before June, as well as by fighter-bombers and rocket-firing fighters of the Eighth* and Ninth Air Forces

* During June, for example, VIII Fighter Command aircraft dropped more than 1,900 tons of bombs, more than the Eighth's heavy bombers dropped in all their 1942 operations. (See History 8th AF, June 1944, pp. 31-34.)

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and the IAF in the weeks following D-day. Naval artillery and rockets shelled the beachhead targets and fortifications during and immediately after D-day, and the heavy artillery, tanks, and trench mortars of the ground forces pounded targets which were also assigned to the Eighth Air Force during this period. Although strike photographs taken during the bomb-run and immediately after gave information about that particular strike if the weather was clear, many air attacks were made through the clouds so that no photographs could be taken. It was possible, however, to determine from reconnaissance as well as strike photographs the results on small targets such as bridges, tunnels, and marshalling yards. Despite this, to assess the results of individual missions was difficult, to evaluate the whole period almost prohibitively complicated.⁷⁴

Officers and men who took part in the fighting on D-day and others who visited the area later were interviewed, prisoners of war were interrogated, and some information was supplied by the Operational Research Section of Eighth Air Force headquarters as to the results obtained by the Eighth's bombing during this period. From all these reports a few conclusions have been drawn. It was found that heavy bomber attacks against well-protected ground forces were not generally effective, with the exception of carpet-bombing in small areas. Only direct hits by very large bombs were considered effective against well-constructed permanent coastal fortifications, and in some cases even then the positions remained operational and their personnel unscathed. The attacks on coastal defenses in the Pas de Calais area, for example, did little damage (as had been anticipated), but the primary purpose was

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achieved--the immobilization of enemy garrisons by the threat of further Allied landings in this area. Heavy bomber attacks when accurate were very effective against pinpoint targets such as bridges, marshalling yards, barracks areas, and specific targets on airfields. Members of the ground forces who were interrogated stated unequivocally that any number of airfields which they passed in Normandy and those behind the initial beachheads were completely destroyed. Destruction or severe damage was caused to at least 16 road and rail bridges across the Loire and rivers on the Brest peninsula, as a result of which many German divisions were delayed from 8 to 15 days in reaching the battle area. French authorities stated that the heavy bombers were much more effective in destroying bridges, marshalling yards, and other railroad installations than were the fighter-bombers. The latter were effective against rolling stock, but the heavies destroyed everything. Prisoner interrogations showed conclusively that heavy bomber attacks on barracks areas and other permanent troop concentration stations brought about great destruction on many occasions. On the other hand, they reported that heavy bomber attacks against relatively small targets were frequently ineffective either because of poor visibility or heavy antiaircraft defenses.⁷⁵ In general then, the heavy bomber's role in NEPTUNE tactical operations was severely limited, but despite the many cases of poor material results, the overall dislocation of enemy supply and reinforcement, Luftwaffe efficiency, and general troop morale justified to a great degree the effort expended to make out of a strategic force an emergency tactical weapon.

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Chapter III

CLOSE-IN AIR COOPERATION, 18 JULY 1944 TO 31 JANUARY 1945

In the preceding chapter the period covered, D-day through 17 June, was devoted by the Eighth Air Force almost entirely to close-in air cooperation. From this point on, although strategic targets received more normal major emphasis, the Eighth was called upon several times to assist the ground forces in specific operations. There were none of these, however, between 17 June and 18 July, but after that time, requests for the Eighth's cooperation in joint air-ground missions were not infrequent. This kind of close-in air action forms the substance of this chapter.

By 27 June American troops had captured Cherbourg, almost clearing the whole of the Cotentin peninsula, and elsewhere the Allied beachheads had become a continuous strip of territory stretching along the Normandy coast to a firmly held bridgehead east of the Orne River. Besides Cherbourg and other towns in the Cotentin, the Allies held Isigny, Carentan, and Bayeux. Caen, however, was still in the hands of the Germans, who were fighting stubbornly to keep it. This area was particularly suitable for defense because the small Normandy fields were divided by ridges of earth some three to five feet high, which were topped by dense growths of bushes and trees commonly called hedgerows, and were sometimes separated by deep ditches. This bocage offered perfect concealment as well as a formidable tank obstacle. To the rear of a forward defense belt 400 yards deep, the Germans deployed successively

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larger forces behind ridges and added numerous mine fields to bolster their defense.¹

Breakthrough in the Caen Area, 18 July 1944

The British were stalled in the Caen sector, the pivot for the Allied plan of advance, and arrayed against them, strong forces of German armor frequently counterattacked both British and Canadian salients. Caen had to be captured and the Orne River line broken if the British were to reach the plain beyond and gain the terrain which would permit the Allies to engage in the mobile warfare they desired.²

To accomplish this, a major offensive spearheaded by air power was undertaken on 18 July, Operation GOODWOOD. The day was opened with a terrific Allied air bombardment, during which 2,200 aircraft flew 6,100 sorties over the battle area and dropped 7,000 tons of bombs. This did not include 1,200 sorties flown by the RAF in three early morning attacks against gun positions east of Caen, a road junction at Cagny, and adjoining woods which sheltered enemy troops and field batteries.³

The Eighth Air Force was responsible for demoralization of personnel, cutting of communications, and temporary neutralization of personnel and materiel in the three assigned target areas, Soliere, Troarn, and Frenouville. Escorted by 90 RAF Spitfires, 643 B-24's of the 2d Bombardment Division were dispatched, of which 571 dropped visually 1,425.4 tons of HE and fragmentation bombs over a wide area some 3,000 yards in front of the advancing troops. Six squadrons failed to bomb for fear of hitting friendly troops when they were unable to make positive

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identification of the assigned target. No enemy air opposition was encountered, but one B-24 was lost to unknown causes. Intelligence reports, which later summarized the effectiveness of this effort, stated conclusively that although the ground forces were not able to follow this assault by a sweeping advance, the bombs dropped by the 2d Division reduced the effectiveness of the opposing German forces to a fraction of what it had been.⁴

Two hours later, after Marauders and Havocs of the Ninth Air Force had dropped 550 tons of bombs, British fighters and fighter-bombers began attacking targets which threatened to impede the advance of Allied troops while other planes strafed enemy lines of communications leading into the battle area. This combined air assault was supported by a heavy artillery barrage and by fire from British vessels in the Bay of the Seine.⁵ Under this cover the troops made rapid progress. While the Canadians bridged the Orne River in Caen itself and drove south and southeast, the main attack was launched from a bridgehead east of the Orne and north of Caen which had been seized on D-day and subsequently expanded despite German counterattacks. By evening the Germans were overrun or bypassed and the British had reached a point about four and a half miles southeast of Caen.⁶

Although only a moderate percentage of bombs actually were dropped in the assigned target areas, enemy organization was effectively broken up, and reports from the British Second Army revealed a great degree of destruction in the bombed areas. The British advance, up to six miles as planned, was made with much less opposition than had been

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expected, and the Second Army indicated that if a further advance had been planned the troops could have gone on since they were completely through the enemy defenses.⁷

Operation COBRA, 24-25 July 1944

The Americans at St. Lo found themselves in a situation comparable to that of the British at Caen, even to a similarity of terrain features. Although there was actually little ground activity from 20 July until the 24th except for patrol clashes, enemy pockets had been cleared above St. Lo and advances had been made about a mile south of the town, where outposts had been established at several points along the St. Lo-Perriers road. Northeast of Perriers the Americans crossed the Sevre River and took the town of Sevre, but on the following day a German counterattack forced them back across the river. The German forces, composed of three strong Panzer divisions, a paratroop division, and five divisions of infantry, presented a formidable defense against which a large-scale attack was necessary, preceded by heavy air bombardment.⁸

The Eighth Air Force was ordered to saturate a five-square-mile rectangular area along the south side of the St. Lo-Perriers road in preparation for an assault by the U.S. First Army. A compromise withdrawal of 1,500 yards was made by the ground forces and the possibility of casualties accepted by them, since the Eighth had requested 3,000 yards clearance. Although weather predictions for 24 July did not presage desired visual bombing and the 25 July outlook was much better, AEF ordered the operation mounted on the 24th. Because of the expected poor

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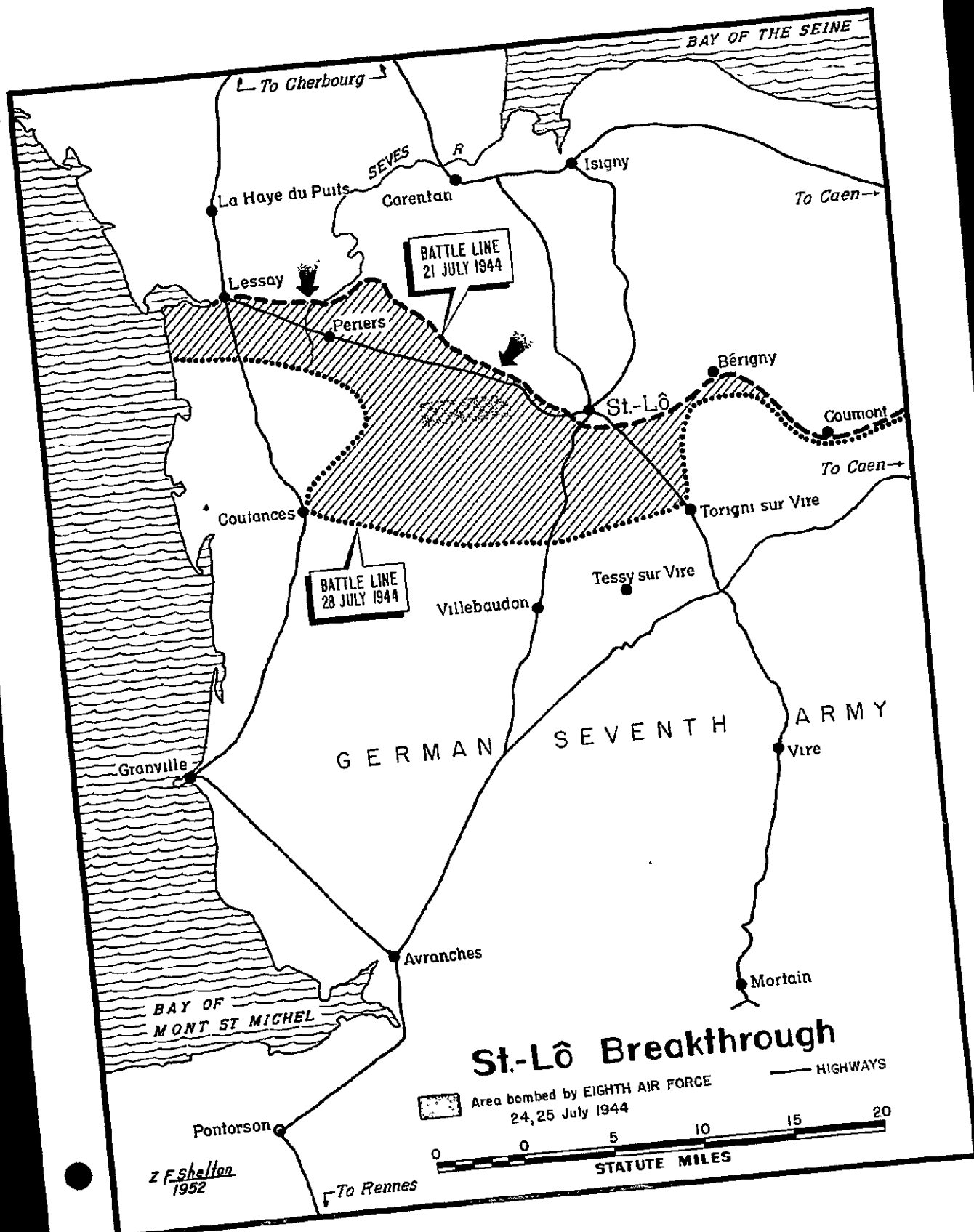
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visibility, the Eighth requested artillery fire with colored smoke as an aid in target identification, and the attack was even delayed two hours in the hope that weather conditions would improve. Finally, however, with time growing short, 1,586 heavy bombers were dispatched. The first formation over the target, the 2d Bombardment Division, encountered 10/10 low cloud and refrained from bombing; the second, slightly better conditions, which permitted the 388th Group of the 3d Division to drop bombs; and the third formation, the 1st Division, found considerable improvement in cloud conditions and a larger part of it bombed. The Ninth Air Force attack had been canceled because of the weather, and the scheduled ground assault also had been postponed. When the Eighth was advised of this, recall was sent out to the bombers, but by that time most of the third formation had already bombed.⁹

All in all, only 343 planes struck the assigned target visually, with fair results; 143 others hit targets of opportunity to the rear of the assigned target area, also with fair results. Escort was provided by 478 aircraft of VIII Fighter Command whose 479th Group ran into 20 single-engine enemy fighters southwest of Evreux, shot down 2, and damaged 2. Three heavy bombers were lost to antiaircraft fire and four fighters did not return, two (from the 479th) as a result of mid-air collision.¹⁰ Of the two instances of short bombing, the first was an inadvertent release which dumped bombs on an airstrip behind the American lines damaging aircraft and installations and causing some casualties. The second case, also resulting in casualties, involved 12 aircraft which bombed early as a result of a premature release by the lead bombardier

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whose bomb-release mechanism malfunctioned.¹¹

Weather conditions on 25 July were better, but visibility in the target area was restricted by haze and prompted the use of colored artillery smoke as on the previous day. Three forces totaling 1,579 heavy bombers were dispatched, of which 1,508 dropped 3,394.7 tons of bombs. Escort was provided by 483 aircraft of VIII Fighter Command, which successfully prevented any sustained attack against the formation by the 50 GAF fighters sighted. Five bombers were destroyed by enemy antiaircraft fire, and two others crash-landed in the U.K. as a result of battle damage. The bombardment's main effect was one of shock, with the concomitant smoke, dust, and disruption of communications and facilities behind the lines adding to the demoralization.¹²

Three times, however, friendly troops were bombed as well. The first was an error by a lead bombardier in making a visual release after failure to synchronize his bombsight; as a result 12 B-24's dropped 470 x 100-pound HE bombs behind their own lines. The second incident occurred when a lead bombardier failed to make proper identification of the target and, confused by gun flashes which he mistook for the red artillery smoke markers, caused 11 B-24's to drop 352 x 260-pound frag bombs at the same point where the previous short bombs were seen to explode. The third short bombing may be laid to a command pilot who ordered bombs released while his bombardier was still sighting for range. The command pilot thought that bombing was to be done by wings rather than groups and dropped his bombs on the preceding formation, which had bombed short but whose bombs had fallen in an area from which ground troops had been withdrawn. The next formation in the bomb-run, however, bombing on the command pilot group leader dropped their bombs among friendly troops.

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Along with bombing errors by the Ninth Air Force, the two-day casualty total from air bombing of Allied troops was 101 killed, including Lt. Gen. Leslie J. McNair and several of his staff officers, and 463 wounded.¹³

After the medium and fighter-bombers of the tactical air forces followed up the Eighth Air Force attack, the U.S. First Army made a break through the enemy lines under cover of a rolling artillery barrage. By evening they had forced the enemy completely back across the St. Lo-Perriers road.¹⁴ The attack continued into the next day, and by nightfall enemy resistance was largely broken in the Marigny area. Meanwhile, offensives were started on both flanks to the east and west of St. Lo, and on 27 July the enemy's positions were completely overrun. The Americans were in Coutances, their primary objective, by that evening. As a result of the air bombardment and the subsequent successful ground attack, the two German divisions holding the westernmost sector of the Cherbourg peninsula were outflanked, one Panzer and one parachute division were badly smashed, and elements of two other Panzer divisions were enveloped.¹⁵

Breakthrough at Caen, 8 August 1944

The offensive which was launched on 25 July at St. Lo reached and passed Avranches at the western crook of the Cherbourg peninsula a week later. Fanning out to the south, west, and east from this breakthrough near the coast, American armor, followed closely by motorized infantry, overran most of Brittany and by 8 August had advanced to within 100 miles of Paris. Together with French resistance and Special Air Service* units, U.S. forces reduced the enemy in this area to such a

* A British air organization similar to the American Office of Strategic Services.

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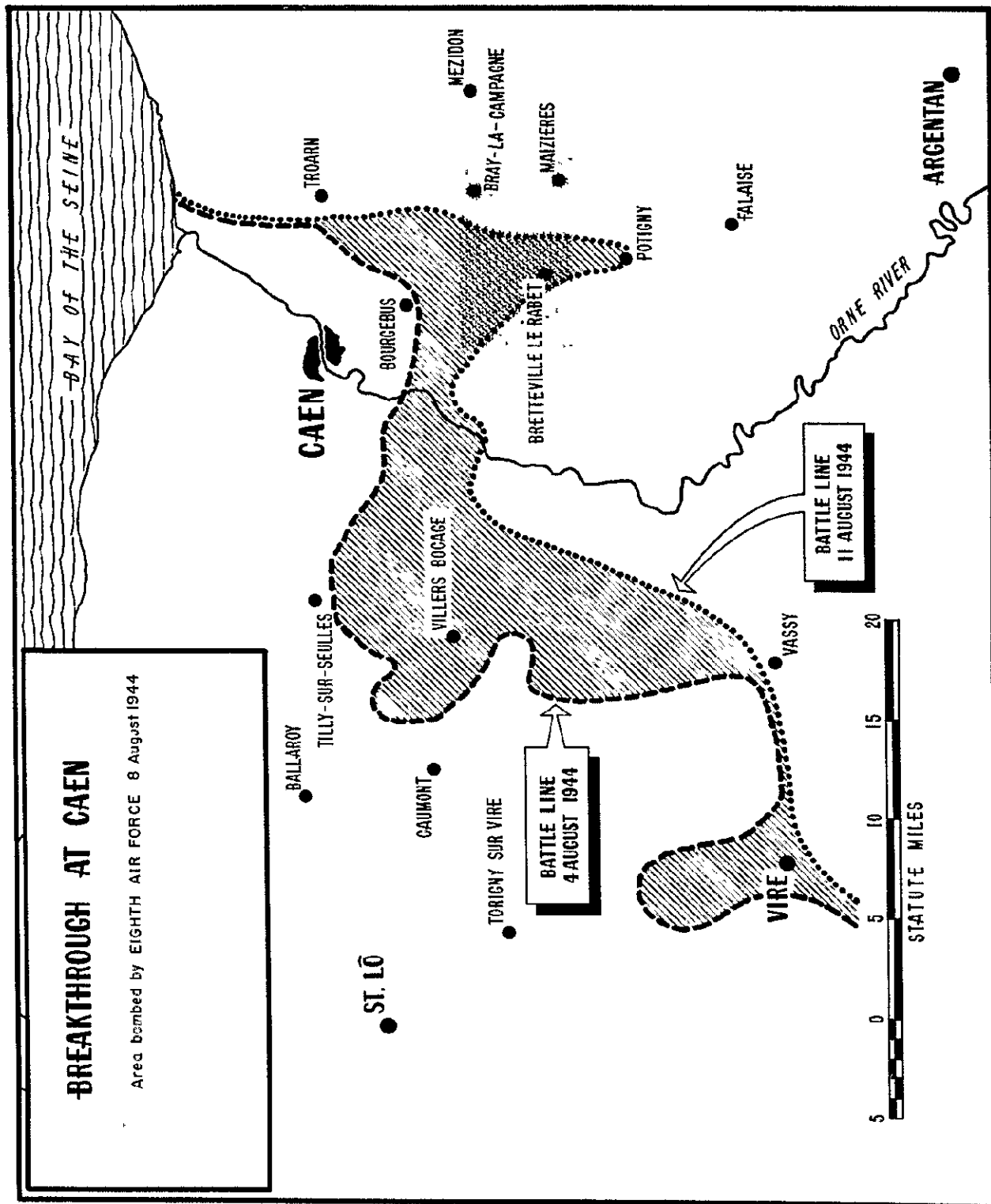
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state of confusion that, according to SPAFF, "the defence of Brittany ports was the only firm plan which the enemy was able to attempt to carry out."¹⁶

Fearful of being outflanked by this American sweep, the Germans decided upon a bold counterattack, the largest since D-day, in the Mortain sector, calculated to reach the sea beyond Avranches and separate the U.S. forces in Brittany from those in the Cherbourg peninsula. Although von Rundstedt moved down from his Orne line below Caen one full Panzer division to join with three others already brought into line, his attack, launched at Mortain on 7 August, was a failure. On the first day the Germans lost 80 tanks to air attack alone. In addition, von Rundstedt had not foreseen that the withdrawal of the Panzer division from the Caen sector was the signal for a Canadian offensive calculated to move farther south out of the more rugged boenge and set the stage for an Allied enveloping movement (the Falaise pocket). The importance of this offensive lay in the fact that it thwarted the intention of the Germans to hold the Orne River line south of Caen while their units in the center and left flank, broken and disorganized by the U.S. breakthrough, disengaged and withdrew to a new defense line.¹⁷

The Canadian offensive at Caen began on the night of 7 August following an aerial bombardment by the RAF. At this time the Canadian First Army held a line along the Caen-Falaise road. The original plan called for the bombing of certain points southeast of Caen on 8 August by RAF Bomber Command, Second Tactical Air Force, and the Ninth Air Force, but because of bad weather at RAF bases the night before, many of the heavy

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bombers were required to land at other than home airdromes on returning from their previous mission. Hence the Eighth Air Force was asked to replace them and carry out saturation bombing of certain enemy forces and installations in four target areas southeast of Caen. Two of the targets were to be attacked before 1300 hours and the other two between 1300 and 1345. Since the Canadian army was to start its move forward when the bombing began, it was essential for the north portion of the target area to be attacked first, with successive waves of bombers working toward the south. Three of these target areas were to be marked by red target indicator flares laid by six GEE-H-equipped B-24's of the 2d Bombardment Division under operational control of the 3d Bombardment Division. The fourth target was to be marked at its north boundary by red smoke from artillery fire. The distance from the nearest friendly troops to any target was 1,700 yards, the area to be marked off by the RAF with yellow smoke. Weather aircraft (scouting units) were to precede each bombardment division by 15 minutes in order to describe weather conditions.

The Eighth Air Force dispatched 681 B-17's from the 1st and 3d Bombardment Divisions, 497 of which launched 764.8 tons of HE and 723 tons of frag bombs against enemy troop concentrations and strongpoints south of Caen. During the mission proper, two groups of VIII Fighter Command escorts, the 352d and 359th, successfully beat off an 11-plane GAF attack on one combat wing of bombers, but after the bombers had withdrawn, the 359th Group encountered 25 FW-190's and sighted 30 more enemy single-engine aircraft near Paris. In the ensuing battle, the American pilots claimed 1/1/3 GAF fighters; 10 B-17's were lost during the

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mission to antiaircraft fire, and battle damage was severe. Results were reported as fair to very good except where targets of opportunity were hit.¹⁹ Sixteen groups bombed in or adjacent to the target areas, two groups bombed targets of opportunity in enemy-held territory, four groups bombed short of targets in enemy-held territory, nine groups returned to base with their bombs because they were unable to locate their targets, and two or three groups bombed inside friendly lines near Caen.²⁰ The target-marking procedures were thus of limited value even when used in conjunction with spotter aircraft. Target indicator flares were well placed on only one target and even then were not visible after the first bombs struck because of the resultant dust and smoke. Neither the yellow smoke for the designation of friendly lines nor the red to indicate the northern boundary of one target were observed prior to bombing.²¹

Originally it had been planned to bomb by combat wings because the nature, size, and shape of the targets were well suited to this tactic and because only a few wings would have been necessary to make the attack; the resultant limited number of separate formations would have permitted the use of highly experienced crews to lead, but when it was required that the northern half of the area be bombed first because of friendly troops advancing toward that area, it became necessary to group the planes in boxes of 12 to 13 aircraft each--55 boxes in all. There were not enough highly experienced lead crews to take care of so many units, however, since a prolonged period of intensive strategic operations had resulted in a considerably reduced experience level, both through

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casualties and the 30-mission limit for combat crews. Contrary to briefing information, intense and accurate enemy AA was encountered all the way over enemy territory and through the target area. Because of the low bombing altitude the fire was exceedingly effective, and there is no doubt that it reduced the ability of the navigators and bombardiers to pinpoint their positions between the initial point, Vire, and the bomb-release line. All of these factors were responsible in some degree for two or three groups bombing friendly troops and inflicting casualties to Canadian troops of 25 killed and 131 wounded.²²

The Canadian First Army had been able to advance only four miles from Caen toward Falaise from the middle of July to 7 August. Caen again proved to be a stumbling block, probably because of the importance attached to it by the enemy and because of the difficult terrain. Since a breakthrough along the Caen-Falaise road would facilitate the encirclement of an important part of the German Army in the west, it was most desirable that all possible effort be turned to this purpose. Accordingly, the RAF bombed the area on the night of 7/8 August, and the Eighth Air Force with other tactical units repeated the attack on the 8th. The immediate consequence of this close-in cooperation was an advance by the Canadians along the Caen-Falaise road, and by the 11th of the month they had cut a salient into the German defenses up to 16 miles from Caen and 5½ miles from Falaise. The northern end of the noose was now formed. By sweeping around the exposed left flank of the German lines, then swinging north on the Argentan-Falaise axis, the Americans eventually closed the pocket which isolated a large portion of the German Seventh Army. The next objective was Paris.²³

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The Brest Campaign, 25 August to 18 September 1944

Although numerous heavy air raids had seriously damaged Brest, an important port and U-boat base on the tip of the Brittany peninsula, a ground assault to capture the city called for close cooperation from the air forces. A number of strongpoints and forts in the outer defense line, as well as coastal fortifications, were to be attacked by heavy and medium bombers from 25 August on, while at the same time fighter-bombers were to be in active, direct cooperation with the ground assault troops. On 3 September the Ninth Air Force was instructed to give first priority to the capture of the city, and with its help an attack began on 14 September which resulted in the city's capitulation on 18 September. No enemy air opposition was encountered during the operation.²⁴

The Eighth Air Force played only a minor role in the campaign, but its three missions against Brest were not without consequence. On 26 August 359 B-17's of the 3d Bombardment Division were dispatched against nine gun positions around the port, eight of which were hit with 364.2 tons of HE dropped by 171 bombers. Weather, 6/10 to 8/10 middle cumulus cover up to 21,000 feet, prevented nine groups from bombing, and two runs were necessary for many groups which did bomb, with poor to good results. Two B-17's collided over England and 1 crash-landed, while 1 of the 49 P-51 escorts from the 339th Group was lost. On 3 September 404 B-17's of the 3d Division, escorted by the 357th Fighter Group, were dispatched against 16 gun batteries and defended localities in the Brest area. The attack was made visually by 393 of these from altitudes averaging 8,000 feet, with fair to good results and the loss of only 2 B-17's. Three

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days later, 143 B-17's hit gun emplacements and strongpoints in the Brest area with 449.9 tons of HE dropped visually through 4/10 to 6/10 cloud cover. The results were fair to very good on three targets--a heavy anti-aircraft battery, a light coastal battery, and storage tanks.²⁵

In general, the use of air power in this operation was wasteful and ineffective. Heavy and medium bombers did little damage to military installations and continued calls for fighter-bombers during the occupation of Brest wasted this most efficient close-support weapon in an effort to rush the inevitably slow house-to-house phase of capture, a weapon that was urgently needed by the advancing armies some 500 miles to the east. Faulty intelligence and poor communications between air and ground units also contributed to the misuse of air power: targets were selected without careful study so that improper bombs and fuzes were often employed, and because of inadequate liaison, ground units were not instructed in air's capabilities and limitations. In an assault upon a fortress such as Brest, heavy bombers are of little tactical value unless a specific target like the U-boat pens is designated, for which specialized, tested bomb-loadings and highly trained crews are available.²⁶

Trucking Operations, 2 September-30 September 1944

When in August 1944 the Allied armies were racing across France, armored elements of Lt. Gen. George S. Patton's Third Army so far out-distanced their supply chain that their logistical position became critical. The demand exceeded the capacities of normal ground and air transport facilities, and the Eighth Air Force had to undertake a series of supply missions, involving 1,983 aircraft between 3 and 30 September,

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which were familiarly called trucking operations.²⁷ The commitment was made by USSTAF headquarters and varied daily depending on the amount of supplies available, loading facilities in the U.K., and airfield and unloading facilities on the Continent.²⁸

This kind of operation encompassed two broad phases, the first of which took place between 3 and 9 September under the supervision of IX Troop Carrier Command and was concerned entirely with the transport of supplies, especially medicine and food. It is difficult, however, to determine whether all of these supplies ultimately reached American forces; some of them for example, may have been diverted to relieve French civilians in Paris. Allied forces had entered Paris on 23 August, and thereafter a number of B-17 supply missions were flown exclusively for the purpose of succoring the needy French populace. Only B-24's, however, were used for the trucking operations. They flew from home bases to IX Troop Carrier Command staging airfields in the U.K., where they were loaded and rerouted to Orleans/Bricey airfield, approximately 70 miles south of Paris. After leaving their cargoes there, the B-24's returned to their home bases for refueling. From 3 through 8 September, 343 Liberators departed from the U.K. and delivered 999 tons of supplies to the Continent without the loss of a single plane. On 9 September, however, when 58 B-24's took off for France with a load of supplies, 2 failed to reach their destination--just one day after the largest of the supply operations, in which 110 planes flew 330 tons to the Continent.²⁹

Although on 12 September 36 B-24's and on 17 September 101 B-24's were dispatched on trucking missions, the second phase actually began

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about 20 September. The remainder of the period between the two phases was devoted to change-over operations. In the second phase, since gasoline was to have first priority, special bomb-bay floors had to be obtained for the B-24 "tankers," and with staging fields unnecessary because the gasoline was to be loaded in bulk at the home bases, the use of Orleans/Bricey was discontinued. The fuel was thus to be transported directly to Chartres airfield (75 miles southwest of Paris), St. Dizier (about 120 miles east of Paris), and Florennes in Belgium (about 140 miles northeast of Paris). Only Chartres was available, however, when the bulk-cargo transport was actually initiated, although on 21 September Lille/Versailles³⁰ airfield was also used.

On 20 September 40 B-24's delivered gasoline to ground troops in France, and on the next day 84 Liberators carried 403 tons of gasoline to the same troops. From this point to the end of September a total of 1,331 B-24's took off from bases in the U.K. to deliver 2,117,310 gallons of gasoline to France; losses for the entire 11-day tanker phase of trucking operation were only one B-24 to AA fire, another on³¹ take-off.

Often there was a discrepancy between the amount of supplies requested and the actual amount delivered. This was due to a number of things: (1) loading crews were not always available at the take-off airfields, and unloading crews in France, supposedly available, were often not present; (2) sometimes materiel to be moved did not reach the U.K. staging bases on schedule; and (3) usually the commitments made by higher headquarters were not definite. Units of the Eighth Air Force had to proceed to the staging bases in the U.K. before ascertaining

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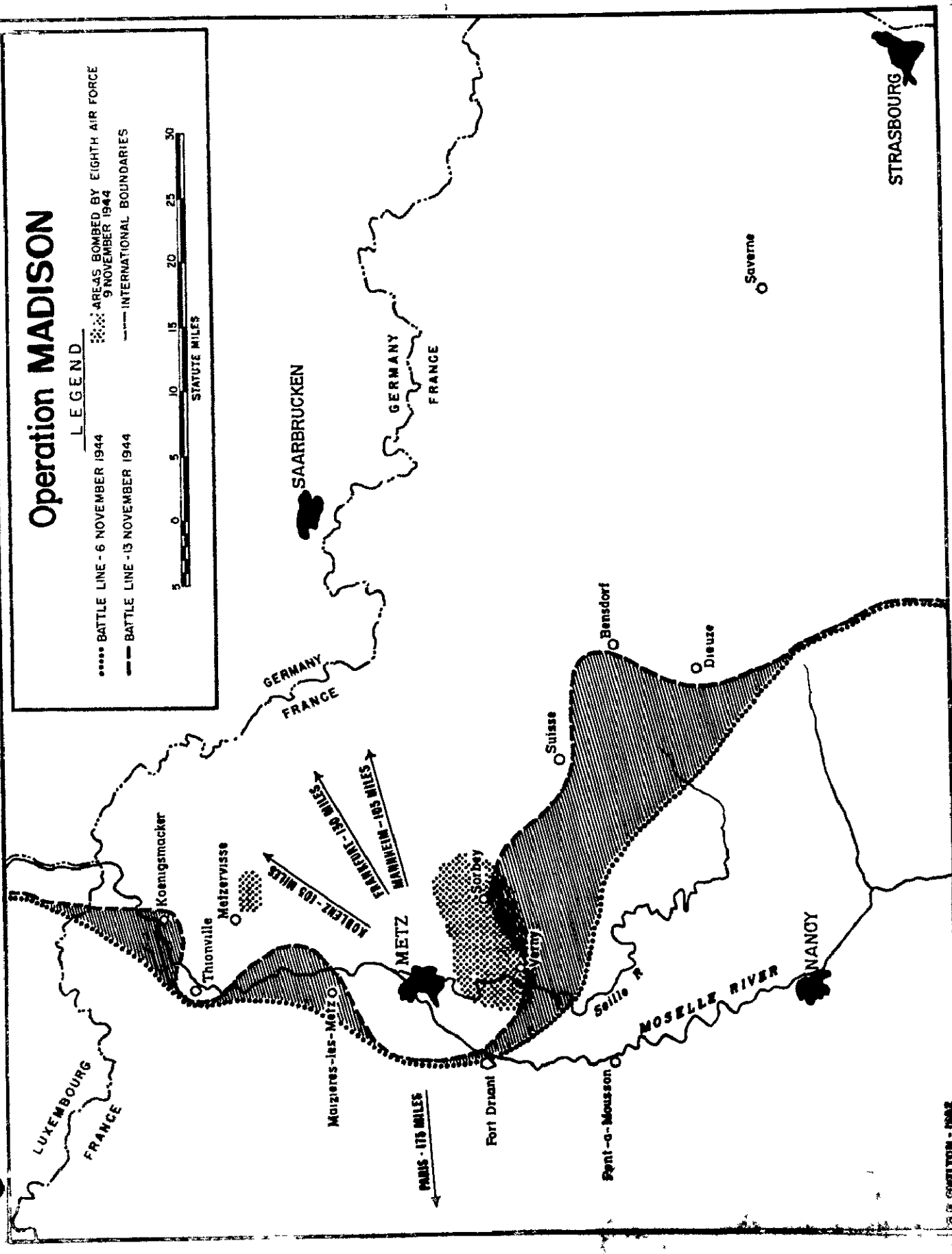
what supplies were available; only on this basis could the number of planes dispatched be determined. The same awkward procedure was followed at the terminal bases in France. In spite of all the difficulties, however, General Patton's forces were supplied by Eighth Air Force B-24's and their logistical position was strengthened for the forthcoming operation, 'ADISON'.³²

Operation 'ADISON, 8-9 November 1944

Since mid-September the fortress of Metz and its chain of outlying defenses had delayed General Patton's Saar offensive. Metz dominated two of the invasion routes between France and Germany--the valley of the Moselle to the north, and to the south the Saverne Gap leading to Strosbourg and the Rhine. Small-scale ground attacks against Maizières-les-Metz, north of the city, and against Fort Driant, six miles to the southwest, had both failed after a bitter 10-day struggle. Therefore Patton decided on a pincers movement to dislodge the Germans from the city.³³

The ground plan envisaged a Third Army offensive across the Moselle River north and south of Metz, bypassing the forts which were too formidable, and an advance northeast to the Rhine River to seize the Mainz-Frankfurt-Darmstadt area. To XX Corps was assigned the mission of taking the city of Metz by encirclement and infiltration followed by the systematic reduction of the ring of outer defenses.³⁴ In addition, Third Army requested heavy border attacks to silence the gun installations in the Metz and Thionville areas, thereby making it possible for armored forces to bypass the forts and gain more favorable positions from which to reduce them. The air operation was initially scheduled for 5 November

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1944, but weather conditions made visual attacks impossible. Attempts were made on succeeding days, but each time the weather prevented their execution. In the interim, clearance was sought from the ground forces to use more precise bombing-through-overcast techniques, and on 8 November this consent was given.³⁵

Thirty forts and strongpoints were originally designated for neutralization by the air forces, but this number was later reduced in order to meet air force capabilities.³⁶ Attacks were planned for only two of the original four targets scheduled in the Thionville area because friendly troops had advanced too close to the other two. The 1st and 2d Bombardment Divisions were assigned to attack forts in the Metz area, but the 3d Division, not sufficiently experienced in the use of Micro-H (a device used for bombing through an overcast) to attack in close proximity to friendly lines, was assigned to the Thionville targets, which were not as important. Even here, as an added precaution, instructions were given the 3d not to bomb unless visual sightings were possible.³⁷

It was determined that approximately 1,300 Eighth Air Force heavy bombers would be needed to produce the desired results. A direct route to and from the targets necessitated crossing friendly lines at approximate right angles; they were to be well marked and crews carefully briefed on these markings. Twelve VIII Fighter Command groups were detailed to support the operation: four P-51 groups were to cover the 3d Bombardment Division B-17's from a point approximately 90 miles west of Thionville through to the target and on withdrawal; four P-51 groups were

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to cover the 1st Division B-17's from a point approximately 80 miles west of Metz to the target and back; three P-51 groups were to escort the 2d Division B-24's from a point about 80 miles west of Metz on penetration, through the target, and on withdrawal; and one P-51 group was to cover an Eighth Air Force "Chaff" force of 10 B-17's and other aircraft on special assignments during the entire period of their operations over the target area. In addition 8 to 10 P-51's were detailed to precede the bomber formations to the target area for the purpose of reporting on weather conditions.³⁸

The attack began on 8 November 1944 with 389 fighter-bombers of the XIX Tactical Air Command (TAC) attacking targets in the enemy's rear—troop concentrations in woods, enemy command posts, motor transport, trains, buildings, and bridges. Approximately 40 enemy aircraft were active on this day, 8 of which were claimed destroyed by XIX TAC at a loss of 7 of their own fighters. The heavy bombers were unable to operate on this day on account of the weather.³⁹

On the next day the weather had not improved much, but 1,120 Eighth Air Force heavy bombers out of the 1,305 dispatched dropped 3,790.5 tons of HE. Most of the units in the first force were unable to make visual sightings in the Thionville area (only 37 planes attacked one fort visually) and proceeded on to Saarbrücken marshalling yard, the secondary target. Cloud conditions were also encountered by the other two forces at Metz, but 960 planes hit these targets through the overcast. The last resort target was attacked by 58 planes, and 65 others struck various targets of opportunity. Altogether 606 fighters were dispatched on their respective escort and weather reconnaissance

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assignments with 588 receiving sortie credit and 581 completing their missions. In addition, squadrons from one of the F-51 groups successfully strafed railway, highway, and waterway traffic after being relieved of their support duty.⁴⁰ No enemy aircraft were encountered by the bombers and only two by fighters, and they were too far away to engage in combat.

There is a wide disparity in the reports of bombers lost on the mission. The Eighth Air Force Intops Summary for 9 November 1944 lists 19 bombers as lost, of which 16 were B-17's and 3 B-24's; included in these figures are 2 bombers to which damage was irreparable. On the other hand, the Eighth Air Force Monthly Summary of Operations for November 1944 lists 20 bombers as lost. In contrast with both of these sources, the Eighth Air Force Tactical Mission Report for 9 November, which was compiled much later than the other two documents, states that only four bombers, all 3d Bombardment Division B-17's, were lost, one to antiaircraft fire and the others to unknown causes. Eight others were "lost" because of severe damage incurred in take-off collisions or landing crashes, while 97 more (mostly of the 3d Bombardment Division units in the Saarbrücken area) suffered combat damage of varying degrees from antiaircraft fire. None of the escort fighters were lost, according to all reports, but there were five planes damaged enough for salvage, two in take-off accidents, one in a landing accident, and two because of mechanical failures.⁴¹

In conjunction with the various ground operations, other Eighth Air Force fighters, operating in four P-47 units and two P-51 units,

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were assigned to strafe and bomb rail targets along the Rhine River. Despite the weather, which caused some aircraft to seek alternate targets and prevented one unit from descending to the low-levels required, four units bombed and strafed marshalling yards, rail lines, rolling stock, and railway installations, while one was engaged solely in strafing attacks. Altogether 208 fighter-bombers were dispatched with 205 receiving sortie credit and 199 completing their missions. In addition to seven cases of battle damage, four planes failed to return, two because of antiaircraft fire and two for unknown reasons.⁴²

The accuracy of the heavy bomber attacks on the forts was very low. Only 1 to 2 per cent of the bombs fell in the seven target areas near Metz, and at Thionville only 3 of 36 squadrons assigned attacked a primary target--missing the mean point of impact at that one. In addition, one unit dropped its bombs behind friendly lines about 10 miles from Metz, fortunately with no casualties. Nevertheless, the main purpose of the air operation, to assist the Third Army in bypassing the Metz-Thionville fortifications, was accomplished. The forts were bypassed with only sporadic fire from them, and some were even captured with little opposition. It is believed that the disruption of enemy communications and the shattering of enemy morale by the intense, if diffuse, air attacks largely offset the lack of significant damage to the objectives assigned for specific attack. A report from the U.S. 5th Infantry Division indicates that the over-all bombardment, which included attacks by the Ninth Air Force and ground artillery as well as the Eighth Air Force, created great confusion among the enemy; quick

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- exploitation by ground forces prevented him from organizing effective defenses. The report further states that not only did the aerial bombardment lower enemy morale but it definitely had a stimulating effect on Allied morale.⁴³

On 8 November, the first day of the attack, three of six infantry divisions crossed the Seille River in a triple-pronged attack to capture eight villages; and the following day, two crossings over the Moselle River were made to take eight more villages. Eleven towns and villages were occupied on 10 November, and Fort Koenigsacker, northeast of Thionville, was captured in spite of soggy ground and reduced air cooperation. After a week of fighting against only moderate German resistance, the southern arm of the pincers had penetrated to within two miles of the city of Metz and was only about eight miles from the forces advancing from the north. This progress was the signal for another Third Army offensive southeast of Metz, where on the extreme right flank other troops pushed close to the road center of Dieuze and the rail junction of Bendorf. By 17 November the 5th Division had elements in the southeastern outskirts of Metz, and on 18 November this division, after taking a fort southwest of the city, entered the outskirts from that direction. Metz fell on 20 November and shortly thereafter the remaining forts crumbled one by one.⁴⁴

Operation QUEEN, 16 November 1944

Earlier in the fall of 1944 the Allies had penetrated the Siegfried Line in the Aachen sector only to find that the Germans had improvised formidable defenses behind it; east and northeast of the city lay the

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fortified towns of Eschweiler and Geilenkirchen guarding the first line of defense, and beyond them was the stronger Roer River line with its fortresses of Duren and Julich. In coordination with a major Allied offensive to be launched toward these bastions on 16 November 1944, the First Army requested an attack by bombers of the Eighth Air Force on heavily fortified enemy positions around Eschweiler immediately in front of the troops. Medium bombers of the Ninth Air Force were to attack the secondary line around Julich, and the built-up areas of Duren and Julich were the targets for RAF Bomber Command.⁴⁵

After planning for this operation had been initiated on 30 October 1944 at a meeting at IX TAC headquarters, a second conference of Army and air force representatives was held on 3 November and final arrangements discussed on 7 November. Since the weather forecast for November indicated a likelihood of cloud cover in the target areas during any day in the month, it was decided that the Eighth Air Force draw up a plan for both Gee-H and Micro-H bombing runs. It was the responsibility of the Eighth to attack the Eschweiler and Langerwehe sectors in order to gain the maximum effect on enemy personnel and field installations with a minimum of cratering. Fighter cover for the medium bombers as well as for its own heavies was to be provided by the Eighth Air Force.⁴⁶

The areas allotted to this air force were so extensive that it was impossible to cover them adequately by bombs. Accordingly, the most strongly fortified sections were designated as aiming points. There were no secondary or last resort targets. Since the plans provided for bombing within two miles of friendly lines, the bombers were to approach their targets over and approximately at right angles to friendly lines. Safety lines and target areas were carefully marked by radio, radar, and

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visual means. Fighter groups supporting the lead units of various bomber formations were to break escort as the lead groups were withdrawing and return to the target areas as cover for succeeding bomber units. Two fighter groups assigned to the last of three forces were to return and give high cover for Ninth Air Force mediums. After completing their escort duties six groups of P-51's were to strafe priority rail and road targets east of the Rhine between Giessen and Hamm.⁴⁷

On the morning of 16 November, 1,234 Eighth Air Force heavy bombers (991 B-17's and 243 B-24's) were dispatched in three forces against tactical targets in the areas planned. Despite the weather, which was worse than had been expected, 1,191 aircraft managed to drop 3,872.9 tons of fragmentation bombs with no inference from GAF fighters. A dense haze at their home bases caused many of the planes to be diverted on their return to the United Kingdom, but no bombers were lost. Eight of the 15 fighter groups detailed actually supported the 3 Eighth Air Force bomber forces and the Ninth Air Force medium bomber force; the other 7 were unable to get off the ground on account of bad weather. A total of 482 fighters were dispatched (473 combat sorties and 19 weather scouting sorties) of which only 1 P-51 was lost to antiaircraft fire and 5 were damaged. The 339th and 355th Fighter Groups which strafed transportation targets destroyed or damaged 10 locomotives, 4 trucks, 50 goods wagons, a gas truck, a power station, and a switch house.⁴⁸

Only one instance of bombing in friendly territory was reported. The aircraft had completed its run and turned away from the target when bombs which had hung up at the time of the normal release worked loose. No casualties resulted, but immediately after the incident was reported

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to a regimental command post, a VHF* air-ground control station broadcast on the bomber frequency at five-minute intervals warning aircraft crews to close bomb-bay doors after bomb release.⁴⁹ Bombing accuracy of all the air forces--the Eighth, Ninth, and RAF Bomber Command which had hit Duren and Julich--was low, largely because of clouds, haze, and some snow in the target areas. Despite the apparent failure of the missions, however, a First Army special report stated that the bombing scattered the German forces, caused them to take cover, and broke their morale. Prisoners of war claimed that many of the Germans did not fire their antiaircraft guns because they feared giving away their positions. Thus, the bombing was at least effective in disrupting the enemy's organization.⁵⁰

Because both air and ground forces were reluctant to have any bombing close to ground troops, overbombing, extensive withdrawal by ground forces before the air assault, and a delayed ground attack later made much of the air effort ineffective. The forward enemy defenses were untouched, and before the ground troops were able to break through to the affected area, the Germans had recovered from their initial shock and were able to make a determined resistance to Allied thrusts. Small Allied advances were made with considerable casualties, but no decisive breakthrough was achieved. Before the final objective was reached, the German offensive in the Ardennes forced a diversion of effort to that sector and stopped further Allied progress.⁵¹

* Very High Frequency

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~~SECRET~~ ~~CONFIDENTIAL~~ 74The Ardennes Counteroffensive

In mid-December 1944 Hitler's armies, without assured air supremacy, launched their first major offensive at a time when Allied forces were off-guard as they prepared for an assault to the Rhine. Although air reconnaissance had indicated heavy German troop movements into the Ardennes sector, previous enemy activity in that area had been for seasoning of new troops before moving to an active sector. Consequently, the Allies were inclined to place little additional importance on the reports, especially since the weather during the period prevented anything like adequate aerial reconnaissance coverage.⁵²

Assembling the German offensive armies was a considerable achievement. Although it was aided by bad weather and long nights, to move a large force into position in such a short time, very real difficulties had to be overcome, among them perhaps the sacrifice of long-run economic and even armament traffic. In any case, it was clearly evident that as far as top priority military traffic was concerned, the Reichsbahn was not yet on the verge of collapse.⁵³

During the period of concentration, 1 November to 15 December 1944, Allied heavy bombers made 133 attacks on 63 marshalling yards in western Germany. Photo-reconnaissance showed slight to heavy damage to the servicing facilities, but without exception where evidence was available, it was noted that through lines were repaired promptly. Despite this the movement of enemy troops was undoubtedly affected since the reports of prisoners of war indicate frequent delays and rerouting. In many instances food, fuel, and ammunition did not reach their destinations,

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and it was impossible to find out where they were.⁵⁴

The plan of the German offensive was to seize Brussels and Antwerp and thereby encircle some 38 Allied divisions, which were poised for a major attack against the Ruhr. Even if these objectives were not attained, much would still be accomplished: the Allied offensive would be thrown off balance and delayed, and by creating tactical priorities for heavy bombers, some respite might be gained from the intensive attack on oil and other vital strategic targets. Unless the attack failed at the beginning, it would gain time, which was of the essence to the Germans.⁵⁵

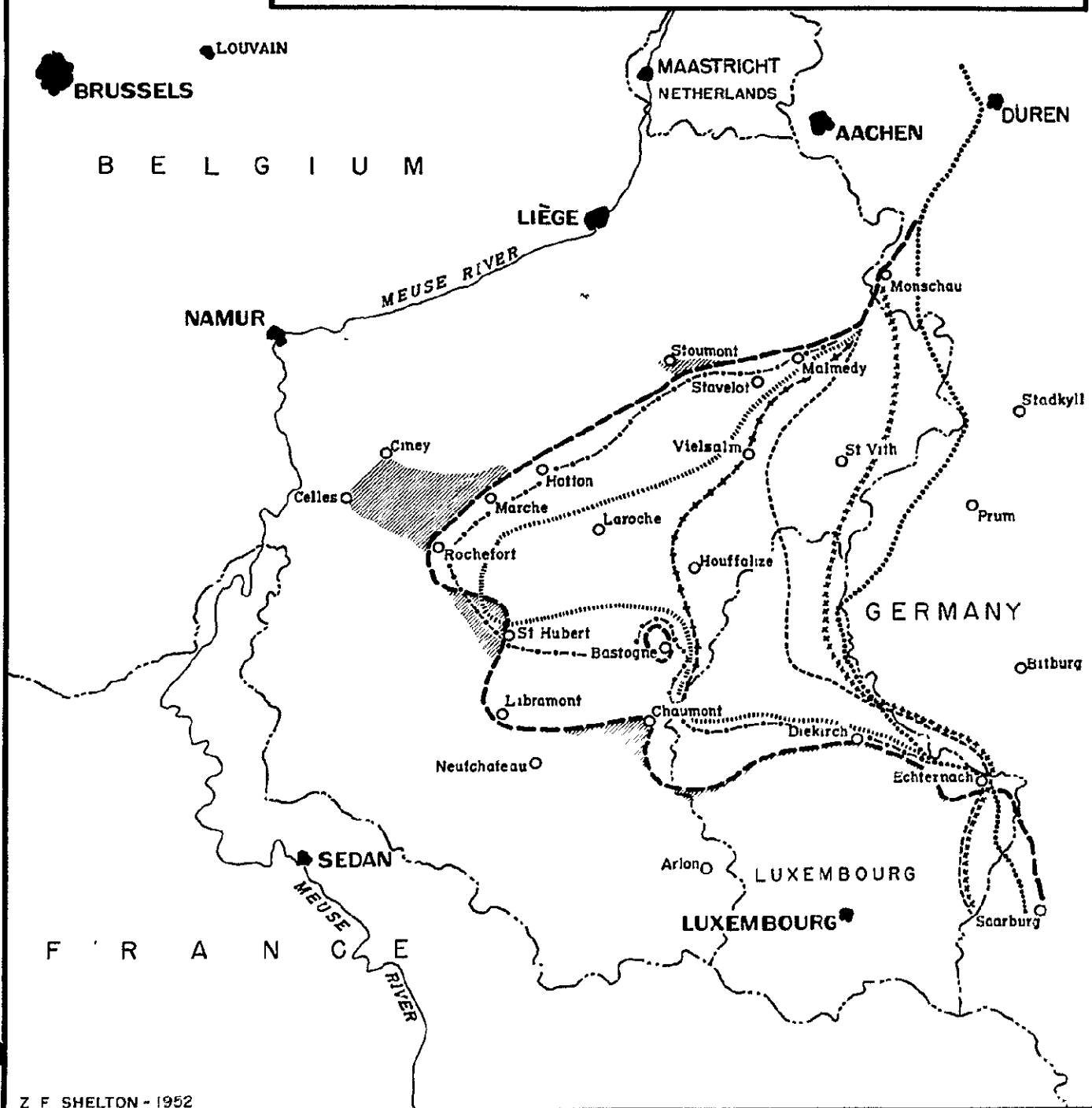
The counteroffensive (coded GREIFF) was launched on 16 December 1944 against areas only lightly held by the Allies. With maximum effort detailed to the Aachen sector and to support the progress in the Saar-Wissembourg area, the Eifel sector where the Germans struck, some 75 miles between Trier and Monschau, was defended by only four Allied divisions.⁵⁶ The attack went well for the first few days and fairly extensive advances were made during the period immediately following the breakthrough. The German Air Force had come back into the battle infused with new strength, and the weather conditions in the battle area kept the Allied air forces out of the air for several days. After a week of the Luftwaffe's having the show to itself, however, the weather began to clear and the Allied air power came back in force. They quickly disrupted the German supply system, for despite the fact that the Luftwaffe had been considerably augmented, it was never able to achieve complete superiority even locally. The stubborn resistance of U.S. forces at Bastogne and St. Vith, and the failure of the enemy forces to

THE ARDENNES COUNTEROFFENSIVE

LEGEND

-----	Battle line	16 Dec. 1944
-----	"	25 Dec 1944
-----	"	1 Jan 1945
-----	"	8 Jan 1945
-----	"	15 Jan. 1945
-----	"	22 Jan 1945
-----	"	29 Jan 1945

- Probable maximum penetration of enemy patrols
- International boundaries
- Large cities
- Towns



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break through in the Monschau area, together with their other difficulties, combined to halt the German offensive within ten days.⁵⁷

After small-scale feints on the Ninth Army front north of Duren, the main German effort developed in two sectors along the Eifel front. The Fifth Panzer Army, attacking in the center, reached Marche without mishap. Bastogne, a necessity to the Germans because of its position as a vital communication and transportation center, was not taken and remained in the hands of the 101st Airborne Division, though surrounded by the enemy. In the south the German Seventh Army began well with limited advances but was soon stopped and driven back with heavy casualties. But it was in the north where the most obstacles were met. After the Sixth Panzer Army got off to a flying start, rapidly shifting Allied forces soon blocked their progress to the north and formed a solid line through Malmedy and Stavelot, which the Germans were never able to penetrate. Furthermore, St. Vith, a key communication center between the Sixth and Fifth Panzer Armies, remained in Allied hands for five days. Even though finally abandoned by hard fighting U.S. troops, a firm Allied salient was maintained in this sector, thrusting deep into the center of the enemy's advance. The enemy made rapid moves to meet this situation in the north. The two badly shaken divisions in the Malmedy-Stavelot sector were replaced by infantry, but instead of attacking, they dug in. Two fresh divisions were brought up to reduce the St. Vith salient rather than pursue the attack farther north as had been originally planned.⁵⁸

The German Fifth Army, out in front, consolidated its positions while

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waiting for its right flank to catch up, but as new attacks on the St. Vith salient failed and as the supply problem became tense, it finally pushed on towards the Meuse. Spearheads advanced almost to the river, reaching Ciney and Celles on 24 December, where they were sharply encountered by Allied forces. On 26 December the 2d Panzer Division, the enemy's westernmost force, was routed and virtually destroyed. Much of its equipment was left behind because of the lack of gasoline. Meanwhile, the 101st Airborne Division at Bastogne repulsed the inadequate German forces sent to wipe it out and Allied relief troops penetrated into the town; the German Seventh Army in the south went on the defensive and began to withdraw; and by nightfall of 27 December, following three days of intensive ground fighting and enormous Allied air effort, the breakthrough seemed to be in hand. Not once thereafter during the Ardennes offensive were German armies able to extend their territories beyond the limit reached on 25 December.⁵⁹

In spite of their reversals, the German armies were not yet ready to retreat. Bastogne was still the stumbling block and after several days of regrouping, the enemy had managed to muster 10 divisions for the assault. Meanwhile, the Allies continued to attack and gradually expanded their corridor into Bastogne by gaining ground on both the east and west sides. When the German attack came, although some of the newly gained ground was lost, the Germans could not take Bastogne.⁶⁰

Farther to the north, another Allied attack soon developed in force to push the enemy back a considerable distance. Reluctant to withdraw even after the cutting of their main lateral supply route, the Laroche-

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Vielsalm road, the Germans fought fiercely until the pressure and risk became too great. Then, aided by heavy snows, they managed to withdraw in good order but not without serious losses: about one-fourth of the men and well over half of their vehicles.⁶¹

On 16 January 1945, one month after von Rundstedt opened his counter-offensive, units of the First and Third Armies met at the road junction of Houffalize, north of Bastogne. Other American troops were driving on St. Vith, and throughout the remainder of January the Allied armies maintained their pressure against stubborn German resistance. On 24 January there were still five miles of Belgium and Luxembourg to recapture, but by the 31st the original battle line was reached. In some places, American troops had even crossed into German territory.⁶²

The battle for air supremacy ran a course very much like that of the ground battle. All through the first week of the German offensive, Allied air power was severely handicapped by adverse winter weather, while the Luftwaffe, operating from clear bases, flew maximum missions. In one day alone they flew 700 sorties, strafing and bombing Allied troops and airfields.⁶³ After the first week, however, Allied air power reassured control of the air over the battle area, and although the CAF managed to fly a substantial number of sorties throughout the period, there is no evidence that it affected either the plans or operations of the Allied ground forces. The Luftwaffe had poor luck. Whereas Allied losses to enemy aircraft in the air were slight, the Luftwaffe's one all-out effort on 1 January 1945,* which did destroy a considerable

* See "Attacks Against Airfields" in Chap. VII, pp.

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number of Allied aircraft on the ground, cost far more in aircraft and pilots than any tactical advantage could justify.⁶⁴

The Allied air operations during the 40-day "bulge" were unusual in that heavy bombers were not used in a direct attack on enemy troops and strong points, but instead were aimed at throttling the enemy by continuous attack behind the salient, strangling his communications and cutting the capacity of his supply routes to a small fraction of his requirements. These operations, together with the cumulative effects of the earlier strategic attacks on his oil production, industry, communications, and air force, resulted in stopping the enemy's offensive within 10 days of its inception. During the following four weeks, the Germans found that withdrawal from their own trap was a tough and costly proceeding because of their lack of fuel and the effective blocking of their road and rail lines.⁶⁵

Weather canceled all but a few missions during the first days of the bulge, and on three days limited the total effort to a few reconnaissance sorties. Even on days when over 1,000 sorties were flown, it was in the teeth of clouds, fog, and snow that aircraft were put into the air. Another difficulty arose from the nature of the ground situation and the dangers inherent in attacking an enemy bounded on three sides by friendly troops. This was complicated by the fact that in the early stages of the operation, the action was so fluid that the battle and attack lines could not be well defined. The enemy had anticipated this and added to the confusion by using Allied identification panels and employing captured tanks and materiel. And finally, the German advance

was so rapid in the beginning that many Allied airfields were in danger of being overrun as well as being constantly threatened by German saboteurs dropped behind Allied lines.⁶⁶

Heavy bombardment aircraft were employed almost exclusively in attacking rail facilities, road chokepoints, and communication centers behind the salient. The outstanding exception to this was their use against enemy airfields on 24 December^{*} in an attempt to smash the increased effort by the GAF.⁶⁷ On that day, with the weather clear except for a slight ground haze, the Eighth Air Force dispatched 1,400 B-17's against 11 airfields in western Germany. The lead group of one formation, sent against Babenhausen airfield, was attacked by about 40 to 50 enemy aircraft south of Liege. The bombers and fighters (the 55th Group) claimed 18 of the GAF planes destroyed and 6 damaged, while losing 23 B-17's and 8 P-51's.[†] The 359th Group, escorting another formation, also encountered enemy aircraft and claimed 13 destroyed and 13 damaged; 8 B-17's and 4 P-51's of this force failed to return. A third force, of 634 B-24's, badly damaged 14 communication centers in the tactical area, while the Fortresses were cratering the above-mentioned airfields, some so severely as to render them unserviceable.⁶⁸ The Eighth Air Force

* See "Attacks Against Airfields" in Chap. VII.

† Claims for enemy fighters destroyed and Eighth Air Force losses do not agree with the figures given for the whole day's operation in Eighth Air Force Monthly Summary of Operations, December 1944. The losses given there for the day are only 11 bombers and 9 P-51's. Enemy aircraft listed as destroyed by the bombers are 15, with 2 probably destroyed and 14 damaged; 75 are scored as destroyed by fighters, 2 probably destroyed, and 10 damaged. There is no Eighth Air Force Tactical Mission Report available for this period, making it necessary to use the figures of the Eighth Air Force Intops Summary, 24 December 1944, which is the only one giving breakdowns.

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pressed their transportation attacks just east of the base of the enemy salient, only attacking in the bulge once with a force of any size. This attack, on 3 January 1945 at St. Vith, was made by 98 B-17's of the 379th, 303d, and 384th Groups (out of a force of 1,163 heavy bombers dispatched against a long list of targets).

Eighth Air Force fighters, however, attacked within the bulge more than once during the period of enemy withdrawal.⁶⁹ Because the GAF supported the initial drive of their ground forces with as many as 700 sorties in one day (17 December), Allied fighters were forced to change tactics: instead of supporting the ground defenses, they had to take up the task of eliminating the German air threat. This responsibility fell mainly on the Ninth Air Force although other tactical air forces, American and British, assisted.⁷⁰

After a week in which the weather prevented any type of mission except on three days (and one of those saw merely a token force take off),⁷¹ the Eighth Air Force carried out daily operations from 23 to 29 December against road and rail junctions, airfields, and railroad bridges to the rear of the enemy drive. The German supply routes running into their salient between Coblenz and Mannheim were repeatedly attacked with great damage to lines and marshalling yards, and on 24 December 11 German airfields and 14 communication centers were hit.* Enemy opposition was quite active on the first three days of the week but thereafter tapered off until there was none on the last two days.⁷²

* See above, p. 80.

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The third week, 30 December 1944, through 5 January 1945, the heavy bombers operated every day except 4 January, encountering air opposition only on two days. Marshalling yards, bridges, and communications centers on railroads leading into the Eifel salient were seriously disorganized. Marshalling yards and rail centers in northwest Germany were hit with emphasis on north-south rail lines along the Rhine and principal routes from central Germany to the western front. Industrial targets, including oil refineries and storage depots, an He-262 factory, and U-boat yards, were struck. In addition, attacks on airfields were resumed in retaliation for the GAF's destructive 1 January attack on Allied airfields.⁷³

From 6 through 9 January 1945, enemy communications into the Belgian salient continued to be hammered, many of the attacks concentrated on bridges across the Rhine. Airfields at Cologne, Bonn, Euskirchen, and Gymnich constituted other targets for bombers as well as fighters.⁷⁴

In spite of adverse winter weather toward the end of the two-week period, attacks were made on steel works, tank and ordnance plants, and oil refineries in addition to the almost daily raids on the German LOC.* Fighters effectively cut seven rail lines, and on 14 January 331 P-51's escorting a bomber force on a strategic mission met with more than 200 enemy planes and claimed 89¹/0/14. Eight P-51's were downed.⁷⁵

During the week 20 through 26 January, the worst weather of the winter was experienced. Bases in the U.K. were covered with low cloud and fog with visibilities frequently as low as 100 yards. Although the scale of operations was reduced, bomber missions were nevertheless flown on four days, fighters on all seven since two groups, the 352d and 361st,

* Line(s) of Communication.

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were based on the Continent and had better weather. Attacks were made against bridges, tank factories, oil plants, railroad bridges across the Rhine between Cologne and Karlsruhe, and the marshalling yard at Neuss. This last target was thought to be the enemy withdrawal point from the bulge.⁷⁶

The German counteroffensive had caused almost a complete diversion of Eighth Air Force effort for a month and a half. From 16 through 30 December 1944 all targets hit by the Eighth were tactical, and except for a 31 December strike against oil refineries at Hamburg and Misburg, a U-boat base, and an He-262 factory, followed the next day by an attack on oil refineries, no other strategic targets were attacked until 14 January when oil refineries, steel works, and a benzol plant received a portion of the Eighth Air Force's bombs. On 15 January one assembly plant was struck, but on the next day, for the first time since the German offensive started, more strategic than tactical targets were assigned. Several oil refineries and the U-boat base at Hamburg were again hit on 17 January, a refinery on the 20th, another on the 22d, and two benzol plants on the 23th. It was not until 31 January, then, that the Eighth Air Force returned to a full schedule of strategic assignments and even then the mission was finally recalled. The enemy had scored at least a partial victory in the Ardennes, for it gave the oil, aircraft production, and communications targets deep in Germany a vital six week's respite from Allied air attack.⁷⁷

That period of grace might conceivably have been extended had not the German supply situation become critical. It was the prime factor in

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the ultimate failure of the German effort and affected both the Luftwaffe and the Wehrmacht. The Germans were able to build up some supplies but they had counted on the capture of Allied stocks of fuel also, stocks which, with few exceptions, were either destroyed or evacuated. A large part of the credit for the German logistical failure is due the Allied air forces. Although the first day of intensive heavy bombing in the rear of the enemy salient had coincided with a considerable German advance, the next day, the fighter-bombers resumed their activity and together with the effects of the previous day's heavy bombing began to slow the German bulge. The combined weight of fighter-bomber attacks on transportation and heavy bomber attacks in the rear was felt almost at once in the forward areas until the rapidly decreasing operating potential of the Wehrmacht soon halted the drive. Thereafter, no further enemy progress was made, and the Germans began to withdraw under continuous attack by all types of aircraft both in and behind the salient. The success of these attacks was attested to by the large number of tanks and self-propelled guns which had to be abandoned by the retreating army because they were out of fuel.⁷⁸

The Germans had used their railways as far forward as possible, establishing railheads and unloading points along the Euskirchen-Trier line, and reconnaissance showed that over this line and all others leading to it military traffic poured continuously. For this reason, Euskirchen, Stadtkyll, Gerolstein, Frum, Bitburg, and Ehrang were prime targets for allied air attack, raids which contributed materially to the early breakdown of the enemy's forward supply system. Intelligence had indicated that the main supplies for the Eifel came from the north via Cologne,

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while the troops came via Giessen and Fulda to Frankfurt and from there to the Rhine and to Coblenz. To interfere with the rail movement of troops through Frankfurt, centers such as Giessen, Fulda, Frankfurt, Hanau, Mainz, Bingen, and Coblenz were attacked. In the north, to interrupt the flow of supplies, marshalling yards at Cologne were the main targets, while others at Rheydt and Neuss also received attention. Attacks on yards at Cologne-Nippes, Giessen, Hanau, Homburg, Trier, and Ehrang were particularly successful. The total effect of the Allied attack was to paralyze all rail traffic west of the Rhine as far north as Cologne and as far south and west as Trier and Frankfurt.⁷⁹ Deprived of rail facilities, the enemy was forced to rely on long hauls by road. Fighter-bombers attacked motorized enemy columns continually, weather permitting, and took a heavy toll of enemy materiel. Heavy and medium bombers attacked communication centers and road chokepoints to form road blocks and further delay the enemy.⁸⁰

The success of the air techniques and procedures used is shown by the results achieved. In spite of adverse weather conditions, Allied air forces were able to deliver attacks in sufficient strength, concentration, and accuracy to be a deciding factor in halting the enemy counter-offensive within 10 days. During the entire Ardennes-Eifel campaign, reconnaissance missions were flown whenever weather permitted. In the early stages of the breakthrough the entire front was extremely fluid, and with the resulting disorganization, reconnaissance played an important part in spotting enemy columns and concentrations, so that Allied ground forces could redeploy to meet the assault and air units could plan their

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attacks. Perhaps the best example of close cooperation with ground units occurred at Bastogne. After attacking targets in that area, aircraft were ordered to a safe altitude to patrol or were given an area for reconnaissance. Their reports furnished targets for succeeding flights and gave ground forces advance information on the German build-up.⁸¹

By the end of January 1945 the Ardennes counteroffensive was considered spent. The Clerf River, the last line before the Siegfried, had been crossed by Allied forces, and numerous enemy divisions began to withdraw, some to strengthen the line forward to Cologne. GAF activity during the withdrawal phase of the campaign took somewhat the same form as that of the German ground forces. Bad flying weather cut down its operations, but even on days when flying was possible the number of sorties were few. The operations of the enemy were defensive, and the number of daily sorties decreased until by the end of the month they were almost nil. Indications by that time were that some of the enemy units were being sent to the eastern front. Heavy bombardment gradually went back to attacks on strategic targets, except for one bombardment division of the Eighth Air Force which, under operational control of the Ninth Air Force, continued to engage in tactical operations. Medium bombardment and fighter-bomber aircraft of the tactical air forces continued their attacks in cooperation with what now amounted to an Allied offensive.⁸²

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Chapter IV

INTERDICTION

The enemy communications system, particularly rail transport, had a place in Eighth Air Force priorities throughout almost its entire history. Starting with the Casablanca directive of February 1943, it continued in most of the major strategic directives, and in February 1944 the Anglo-American air forces put into operation the "Rail Plan," which lasted until D-day. As many as 80 targets were scheduled for attack by AEAFF, RAF Bomber Command, and the Eighth Air Force; of these, the latter was assigned 23. By D-day the Eighth had destroyed 15 of its targets completely, the other 8, although severely damaged, needing renewed attack.¹

While the Rail Plan was in force, a total of 21,949 Allied aircraft dropped 66,517 tons of bombs on the 80 targets, the Eighth's contribution amounting to 4,462 sorties and 11,648 tons of bombs. In addition, railway centers not in the original plan, were also attacked by the Eighth in 763 sorties, 1,837 tons of bombs being dropped.²

Operations to D-day

On 17 April 1944 AEAFF issued a directive placing approximately 25 French and Belgian marshalling yards in third priority, after counter-air operations and the CROSSBOW campaign. This was part of a joint effort by the Eighth Air Force, RAF Bomber Command, and the Ninth Air Force to weaken the railroad system of eastern France and Belgium to such

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a degree that it would be unable to sustain the heavy demands which would be placed on it as soon as the Normandy battle began. The Eighth's objectives were the locomotive and general maintenance facilities in the marshalling yards,³ and in addition to bomber attacks on these targets, fighter sweeps were carried out against rolling stock with excellent results, VIII Fighter Command contributing 1,731 sorties from 19 May to D-day. The Eighth also attacked rail junctions in the Paris area on 2 and 4 June at Juvisy-sur-Orge, Villeneuve, St. George, Versailles, Acheres, Massy, and Palaiseau. Tracks and crossings at the last four places were effectively covered with heavy bombs, so that all through traffic was interrupted. Rail centers in eastern France, Belgium, and Western Germany were also hit, with particularly effective attacks on Liege, Charleroi, Montignies, Metz, Mulhouse, Reims, and Troyes.⁴

Since the sustained disruption of rail communications over such widespread areas had an important effect on the Allied landing, the net result of the campaign cannot be measured entirely in terms of facilities, rolling stock, or materiel destroyed. With the capacity and flexibility of the enemy rail system decimated, the German armies in the field were denied the freedom of movement necessary to mount effective attacks and counterattacks. Further, they and their supplies were forced onto the roads, a move which not only slowed them up and made them more vulnerable to air attack, but necessitated the use of motor transport. The consequent increased consumption of oil and rubber ate into precious reserves.⁵

As an essential part of the dislocation of the enemy's LOC, an attempt to destroy all the principal road and rail bridges leading into the assault area was also made. In order not to betray a special interest

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in the NEPTUNE area, attention was paid initially to bridges over the Seine as well as some over the Oise, Meuse, Loire, and the Albert Canal. Although some experimental bridge-bombing had been done earlier, this plan was launched in May, geared particularly to the capabilities of fighter-bombers and mediums; the bridges south of Paris to Orleans and west along the Loire were left to the NEPTUNE assault forces.⁶

The bridge campaign was considered essential since it was believed that more permanent interruption of through traffic could be achieved in this way than by attacks on railway centers: the estimated minimum time for military repair of a bridge was 25 days if begun immediately. The enemy, however, did not always repair a damaged bridge, for he knew that as soon as it was usable, it would be bombed until again put out of commission. Despite the fact that the construction and size of bridges rendered them very difficult to hit and even more difficult to destroy completely, when they were damaged or destroyed enemy movements were hampered to such an extent that it was considered worth the effort.⁷

As a result of the bombings, 12 railway bridges and the same number of road bridges over the Seine River--largely RAF and Ninth Air Force targets--had been rendered impassable by D-day. In addition, three railway bridges at Liege, others at Hassel, Herenthals, Namur, Conflans, Valenciennes, Hirson, Konz Karthaus, and Tours, and a highway bridge at Saumur had been effectively bombed by the Allied air forces. During the period from 21 April to D-day the Eighth made 11 attacks (53 heavy bomber and 148 fighter-bomber sorties) on rail bridges, dropping 227.5 tons of bombs; on one raid alone, 24 fighter-bombers dropped 24 tons of

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bombs. In addition, road and rail bridges were bombed as targets of opportunity by fighter-bombers of the Eighth Air Force while engaged on offensive patrols against miscellaneous targets; these are not included in the above figures.⁸

Operations from D-day through June 1944

From D-day on, the directive for attacks on railway centers ceased to be operative. The new strategy called for the bombing of railway junctions and crossovers, together with the cutting of tracks, to prevent enemy reinforcements and supplies from reaching the Allied beach-head. No specific targets were allocated to any one command; instead, priorities were decided at the AEAF morning conference each day and suitable targets allocated to the various commands, with special consideration being given to the Army's requirements along the battle front.⁹

From D-day to 28 June 1944 the Eighth Air Force heavy bombers flew 667 sorties against AEAF-specified transportation targets, on which they dropped 1,745 tons of bombs. The main attacks, in which they operated with mediums of the tactical air forces, were made against junctions in (1) the Nantes-Angers-Saumur-Tours-Orleans areas, to cut rail traffic from south France; (2) the Orleans-Chateaudun-Chartres-Etampes-Dreux area, to cut rail traffic from southeastern and eastern France; (3) Paris, to cut rail traffic from northern and northeastern France; and (4) in the Rennes-Pontaubault area, to cut rail traffic from east of Brest and the Brest peninsula.¹⁰

Allied fighter-bombers, in addition to many small-scale attacks against railway targets within the above areas, kept the entire railway

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system within the battle zone consistently out of order. The attacks were in general highly successful, and enemy rail traffic was substantially curtailed. Although the fighters bore the heaviest load in this campaign,* the heavy bombers aided considerably, since in one blow they could, if the target were hit directly, throw a junction or crossover out of commission for several days at a time.¹¹

Parallel with the attacks on the rail centers leading into the assault area, the destruction of bridges--designed to isolate the tactical area--was continued. In order to close the gap between Paris and Orleans, a series of rail bridges, the "first line of interdiction," and junctions in that area were selected for attack. By 17 June at least 16 of them had been either destroyed or severely damaged by the Eighth Air Force,[†] and by 28 June all but 1 had been cut. In addition to these, the highway bridges across the Seine and two of the more important ones across the Loire remained impassable. Farther north, a large number of the more important spans in the rail systems of northwestern France and Belgium were smashed, and a considerable number of minor bridges within the tactical area had been rendered useless. During the latter half of June a tentative start was made by the Eighth Air Force upon a second line of interdiction--a series of railroad bridges on a line southward from Etaples

* From 6 to 17 June VIII Fighter Command made a total of 335 fighter-bomber attacks (in all instances in groups of eight aircraft or more) against all tactical targets, 147 of which were against railway marshalling yards, sidings, junctions, and tracks. Total bomb tonnage for the period reached 1,339.3. (See 8th AF Tac. Opns., Summary and General Comments, p. 4.)

[†] See Chapter II.

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(in the Pas de Calais area), which passed to the east and southeast of Paris. At no time was any attack permitted on bridges in the Paris area itself.¹²

Usually, "bridge-busting" raids were followed by photographic reconnaissance, and on those where the bombing was found to have been ineffective, attacks were renewed until destruction or serious damage had been achieved. The progress of repair work was also followed in the same way, and bridges which had been put into some kind of working order--usually with only a single track open--were given further attention. In the case of several of the more important bridges in the first line of interdiction, the cycle of breakage and repair was repeated two and even three times.¹³ AEF and the Eighth Air Force shared these bridge assignments in the period 6 to 28 June, the heavy bombers of the latter flying 1,758 sorties against rail bridges (representing 5,200 tons of bombs) and 144 sorties (452 tons) against road bridges, and the fighter-bombers flying 488 sorties (339 tons).¹⁴

In a study of the effectiveness of the Normandy road interdiction program immediately following D-day, the Operational Research Section of the Eighth Air Force concluded that at best it was moderate. Although some roads were blocked--more weren't--armored vehicles could get through regardless, routes for other vehicles could be cleared in a few hours, and the German armies used secondary roads or went across fields. In fact, the bombings delayed Allied troop movements more than they did the enemy's and caused severe casualties among the French civilian population. In anticipation of this last result, during the pre-invasion planning General Spaatz had protested the plan to bomb towns as a method

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of blockading roads; his protest, however, had been overridden by SHAEF.¹⁵

The over-all results achieved by Eighth Air Force bombing and strafing operations cannot be based solely on an examination of claims for the period. These are by no means complete. In many instances there was not sufficient time between sorties for detailed interrogation, and in others the participating groups described results in general terms without specific claims. The following fighter claims against rail and road transportation, however, are believed to represent the minimum results obtained against such targets for the period 6 to 17 June 1944:¹⁶

<u>Target</u>	<u>Destroyed</u>	<u>Damaged</u>
Locomotives	118	70
Railroad cars	375	1,258
Trucks	607	533
Tanks	16	31
Armored vehicles	12	15
Staff cars	7	10
Other vehicles	80	36

These claims afford a graphic indication of the Eighth Air Force's contribution to the isolation of the beachhead area, as well as justifying the German reluctance to travel the rails or the roads by day.¹⁷ German PW's did not hesitate to admit that strafing by fighter aircraft was greatly feared.* When fighter-bombing was followed by strafing attacks, the number of enemy casualties increased, since the troops were often too stunned by the bombs to seek effective cover. Road and rail networks were so thoroughly patrolled and persistently attacked by fighter aircraft that most troop movements were carried out only at night, and in many instances they had to be made on foot because of the great destruction to tracks and the shortage of vehicles.¹⁸

* They especially dreaded the P-38 since its engines, in comparison to the loud P-47, did not herald the attack in time for the Germans to dash for cover.

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From 17 through 28 June Eighth Air Force fighters and heavy bombers continued their activity against transportation targets. After completion of their escort or patrol duties, fighters attacked these targets every day, weather permitting. One particularly big day for the bombers was 22 June, when 319 B-17's from the 1st Bombardment Division were dispatched against six electric power installations in northeastern France and marshalling yards at Lille, Frevent, and Ghent. Frevent was bypassed because of 10/10 cloud coverage but bombing by the 305th and 306th Groups was good at Ghent, by the 303d, 379th, and 384th fair at Lille. On the same day nine combat wings of the 2d and 3d Divisions were dispatched to bomb targets around Paris. Eleven B-17's of the 388th Group hit the Melun railroad bridge with 27.5 tons of HE, 11 of the 452d Group hit the Melun marshalling yard with 26.5 tons, and 8 B-17's pounded railroad tracks and the marshalling yard at Gretz with 15.8 tons of bombs. A special Azon glide-bomb group of 10 B-24's from the 2d Division was dispatched to attack two railroad bridges over the Loire at Saumur and Tours la Riche; 9 of them dropped 21 x 1,000-pound GP glide bombs with good results at Tours la Riche, poor at Saumur. Seven fighter groups (the 355th, 352d, 364th, 20th, 359th, 55th, and 479th) were dispatched to dive-bomb four railroad bridges in the area north of Paris—one in the Amiens area and three in the St. Quentin area. After 137 of the fighters dropped 133.5 tons of bombs with poor to good results, they strafed in the Paris-Laon-Reims-Chalons-sur-Marne-Sommesous area with the following claims: 6 locomotives destroyed and 2 damaged, 16 trucks destroyed and 6 damaged, 21 box cars destroyed and 5 damaged, 3 tank

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cars destroyed, 5 flak cars destroyed, 5 half-tracks destroyed, 2 railroad switch-houses destroyed, 1 barge destroyed and 2 damaged, 2 oil tanks damaged, and 2 hangars damaged. In addition, fighters damaged several tank cars, destroyed an electric power station, damaged a radar station, destroyed a small bridge, and in the vicinity of Montigny Lengrain the 355th Fighter Group strafed a train of more than 20 cars carrying trucks, field equipment, and soldiers. Three fires were seen on the train, the locomotive was destroyed, and 200 or more soldiers were strafed as they fled.¹⁹

From 23 through 30 June bridges were hit and military transportation targets were bombed and strafed every day except the 26th, when weather conditions prevented. On 24 June the bridges at Saumur and Tours la Riche were again struck, this time by 74 B-17's from the 91st and 381st Bombardment Groups. Saumur bridge received 89.5 tons of bombs with effects ranging from good to very good, and 108 tons fell on the Tours la Riche span with fair to good results.²⁰ On 29 June eight P-38's of the 55th Fighter Group were dispatched on a high altitude mission against an enemy convoy in the Zuider Zee. When they encountered 9/10 cloud at 15,000 feet, however, they bombed the canal locks at IJmuiden instead; four aircraft attacked with nine 500-pound GP bombs, all of which fell in the immediate target area. On the same day escorting fighters strafed and destroyed 9 locomotives, 15 to 20 flat cars, 10 tugs, and damaged 3 locomotives, 27 railroad cars, 20 to 30 tank cars, 25 goods vans, and 9 barges.²¹ On the following day the 356th, 78th, 353d, 20th, 55th, 56th, 479th, and 364th Fighter Groups achieved excellent results at the

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Nogent-sur-Seine bridge, two bridges near Gien, the Nevers bridge, and a marshalling yard north of Nevers. Good effects were obtained on a railroad bridge near Sully and on the Chenoise bridge, fair to good on marshalling yards near Joinville-en Vallage and Chevillon, and fair on the Joigny bridge.²²

The measure of success achieved by Allied air assaults on the enemy lines of communication in delaying the movement of enemy troops into the battle area may be deduced from the following Allied estimates:²³

ENEMY BUILD-UP

<u>Estimated Build-up Capacity by Divisions</u>	<u>Day</u>	<u>Actual Build-up</u>
9 (2 Panzer)	D	8 (2 Panzer)
24 (9 Panzer)	D + 7	15 (5 Panzer)
31 (10 Panzer)	D + 17	18 (6 Panzer)

Some enemy formations suffered heavy casualties en route because of long, hazardous journeys by road, which placed an additional burden on already badly strained mechanical transport resources. Still others had to travel great distances on bicycles, so that heavy equipment and tanks frequently became separated from the scattered troop formations.²⁴

Operations for July 1944

During the month of July more than 900 heavy bombers were dispatched in direct support of the ground forces against transportation targets in northwestern France, most of them consisting of marshalling yards and railroad and highway bridges. In addition, on marshalling yards, rail bridges, highway bridges, culverts, and overpasses VIII Fighter Command dropped a total of 2,876.5 tons of bombs during the month, nearly 1,000

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tons more than they had dropped in June. Many of the fighters carried bombs as large as 1,000 pounds as well as utilizing auxiliary fuel tanks wired with incendiaries to fire marshalling yards and supply dumps.

Since strategic bomber missions were increasing, however, the fighters were needed for escort duty, and two-thirds of their missions during July were flown into Germany in support of heavy bombers.²⁵

Nevertheless, it has been estimated from FW reports that destruction to bridges and railway installations by American aircraft in July impeded the movement of German reserves and supplies to the front lines by not less than ten days.²⁶

An order issued by the Reichsbahn, effective 17 July, indicates the effect of the bombing. It required travel permits, which would only be granted if the trip were a "permitted journey," for all passengers going farther than 100 kilometers (62 miles) by local or semifast trains, and all passengers using express trains regardless of the length of their journeys.²⁷ Interviews with French railway officials revealed that Allied air attacks on main-line stations in France added very considerably to the effectiveness of strafing attacks along the lines. Troop and freight trains in the yards were damaged as well as the general control and communications systems. In addition, road approaches to the station were cratered, military stores in the yards were frequently destroyed, and the station staffs demoralized. And most importantly, this havoc was being caused by relatively small-scale attacks, even by four or five aircraft.²⁸

The Chartres assaults graphically illustrate the efficiency of such operations. Before the invasion, this city handled more than 50 German

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trains per day. It was attacked first on 14 June, followed until the German departure on 16 August by 17 raids on either the station or its approaches. In conjunction with the destruction of the Maintenon viaduct on the Paris line and frequent cuts to the west and south, these reduced the daily average traffic to a single train. And then, many of the trains which did reach Chartres were unable to go further, because of rail cuts out of the city, and slowly clogged the station. On three separate occasions, the station was attacked with very satisfactory results when the lines were jammed with immobilized supply trains.²⁹

Eighth Air Force fighter-bomber and ground strafing attacks, like those of the other Allied air forces, were most effective against small targets such as enemy motor vehicles and convoys, railroad trains, headquarters buildings, and troop concentrations. They were able to attack these small but important targets when weather conditions were too bad to permit attacks of any kind by the heavy bombers. Although it would be impossible to ascertain the number of casualties inflicted upon the enemy in these operations, PW interrogations indicated that several field headquarters of the German Army were destroyed by fighters and that large numbers of communications centers, wireless stations, radar installations, and similar objectives were also eliminated.³⁰

Two further attempts were made to deal with the railroad bridges, 17 in all, on the second line of interdiction--bridges from Etaples to the east and southeast of Paris.* The first raid, made in mid-July, put three bridges permanently and six bridges temporarily out of use. The second, during the first half of August, obstructed over half of them; the plan

* See above, pp. 91-92.

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to destroy the rest was then halted, owing to the rapid change in the ground situation. At no time was this second line of bridges ever completely closed.³¹ Other bridges, however, as well as miscellaneous transportation targets, continued to occupy both Eighth Air Force fighters and bombers during July. From 4 through 10 July, bridges in France were struck almost daily except when weather conditions made it impossible. On 11 July all three bombardment divisions attacked transportation targets in Munich, and when results were unobserved, repeat attacks were staged the next day and the 13th. The results of both these missions (the last involving 1,043 bombers) were not determined. Again on 16 July, 1,087 bombers of the 1st and 2d Bombardment Divisions were dispatched to attack industrial and transportation targets in the Munich and Saarbrucken areas, and once again results were unobserved, although one fighter group, the 56th, strafed railroad traffic in the Luneville area, destroying two locomotives and damaging three.³²

A particularly outstanding day for the Eighth Air Force was the 17th of July. A total of 670 bombers were dispatched against 14 bridges, rail junctions, a NOBALL site in north central France, and the Belfort marshalling yard near the Swiss border. All targets were bombed except the Beautor railroad bridge, most of them with good results. Excellent results were obtained by the 490th Bombardment Group on the Sully bridge, where at least one span fell into the river. (It had been bombed several times previously, however.) At the Frevent bridge and embankment the 379th Group cut all tracks, bombs fell in an adjacent marshalling yard and on rail lines of the junction, and the eastern chokepoint of the yard received five hits. Tracks were cut on the Feronne bridge by the 303d

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Group, and at the Doullens rail junction the 305th Group got 15 direct hits in the marshalling yard, 1 on the rail house, and 3 on rail junctions. One direct hit was made by the 306th Group on the Ham-sur-Somme bridge, six on rail lines leading to the bridge from the south, and two on lines to the northern terminal. Two probable direct hits were made by the 92d Group on the Anizy le Chateau bridge, four on the rail line to the western terminal of the bridge, and six on the line to the eastern terminal. The Jussy bridge received one direct hit from the 306th Group and two were made on rail lines north, six on lines south of the bridge. The rails were well cut by the 389th and 453d Groups at the Belfort marshalling yard where rolling stock was damaged and the entire yard covered with a good concentration of GP bombs. The 445th Group blanketed the Nanteuil bridge as did the 489th at Les Foulons. Hits by the 487th Group were seen on both ends of the Gien bridge, by the 34th on the Neuvy-sur-Loire bridge, probables by the 100th on the Auxerre bridge where the approaches were cut, by the 95th on the Joigny-Laroche bridge where the tracks were cut, and on the Tergnier bridges, rail and highway, as well as the city's canal locks. Although results were poor at the Lecon marshalling yard, there was one direct hit on the highway bridge embankment at the west chokepoint and other hits on sidings and repair shops. Escorting fighters of the 359th, 4th, 78th, and 20th Groups claimed numerous transportation vehicles, the latter also getting a flak tower and a roundhouse.³³

On 19, 21, 23, 28, and 29 July fighters on escort duty strafed transportation targets in Germany. On the 24th bombers supporting ground

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operations in the Periers-St. Lo area hit transportation targets of opportunity, and escorting fighters strafed others, as they did on the following day while on ground-support. On 26 and 27 July, fighters hit marshalling yards and rail transportation facilities with good results at St. Just en Chaussee and in areas south of Rouen and Amiens and did the same to the Orleans-Gien area on the 30th.³⁴

Operations, 1 August through 15 September 1944

The outstanding achievement of Eighth Air Force fighter and fighter-bomber aircraft during August was their participation in the successful attack on enemy transportation. More locomotives were destroyed and damaged than in all previous months: a total of 1,208 and 1,044 respectively. Another crippling blow was struck at the German oil supply, when 917 tank cars were totally destroyed and 729 were damaged; this was approximately six times as many as had been claimed by the fighter pilots in all previous months. Along with this accomplishment, the impressive total of 3,430 freight cars were destroyed and 11,540 damaged, 5 complete trains destroyed and 13 damaged, 1,332 trucks destroyed and 1,027 damaged. The thorough coverage of the enemy's road net by Eighth Air Force fighters resulted in the destruction of 210 miscellaneous vehicles and damage to 176. Canals and rivers were combed for targets, and the resulting total was 35 barges destroyed and 224 damaged. The equipment of the rail transportation system received its share of attention as fighter-bombers hit 9 railway stations, 13 switch or signal towers, 4 repair cranes, and 32 roundhouses.³⁵

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Additional tactical support for the Army ground forces was furnished in August when 776 heavy bombers dropped 2,528 tons of GP bombs on some 25 bridges in France. Because of the difficulty inherent in this type of target, seven attacks showed poor results, and in only three cases were the bridges completely destroyed or broken. In other cases, where the results were fair to good, the chief damage was done to approaches and abutments. Eighth Air Force heavy bombers also hit key bridges behind the German lines during August, but again results were only poor to fair.³⁶ In a sense these failures were a blessing to the Allies, for in August the rapid ground advances across France made it apparent that usable bridges and rail facilities would be of greater advantage to the pursuers than to the retreating enemy. Consequently, bridge-busting and attacks on rail centers were gradually reduced. The great portion of the effort expended against the enemy's rail system was in bombing and strafing attacks by fighter-bombers, which were also employed in guarding the southern flank of the ground advance toward Metz.³⁷

With the exception of that in the Pas de Calais area the main enemy rail activity before 1 August had been redeploying troops in southern France, moving troops against the Maquis, and maintaining supply lines from Germany. After seven and a half weeks of fighting, the movement of supplies to replace large stocks already consumed became the most essential of these, although the other two types of rail activity were not totally neglected.³⁸

Whereas formerly the routes through northern France and Belgium were used by the Germans to transport fuel and ammunition from Germany to the

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west, in August there was an increasing tendency to use more southerly routes, except for the one Givet to Paris which was still being used to carry fuel off-loaded from barges plying the Meuse River. Strasbourg, the third largest inland port in France, continued as the transfer point for fuel brought by water down the Rhine. A considerable amount of traffic was diverted along the main lines via Mulhouse, Belfort, and Dijon, also via Nevers and Montargis. The emphasis on Paris as a distributing center had increased, largely as a result of the Allied blockage of lines across the Seine and the Loire; from Paris supplies were generally sent either by road to the battle zone or by barge to Rouen. The supply routes which were in use funneled through five main points, Aachen, Trier, Saarbrucken, Strasbourg, and Mulhouse, all large railway centers not easily put out of action. Thus, bridges on the lower Seine and the Loire had to be kept inoperative by continuous attacks, and since some traffic found its way through to the Paris area, eight important unloading centers there had to be attacked: Melun, Corbeil, Montereau-sur le Yonne, Montargis, Meaux, Ivry-sur Seine, Bercy, and Vaires-sur Marne.³⁹

On 1, 2, 7, and 8 August heavy bombers hit bridges in France with results varying from poor to good; on the same days and on the 5th, fighters successfully attacked numerous transportation targets. On the 3d the heavies struck marshalling yards in Alsace and at Saarbrucken and on that day and the 4th hit scattered transportation targets in Joigny, Neuilly-sur-Seine, Troyes, and Lens; results generally were good.⁴⁰ On 9 August the bombers attacked the Saarbrucken and St. Vith marshalling yards and yards in Luxembourg; on the 10th and 11th they struck bridges

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and yards in France; and on the 12th the 303d and 379th Bombardment Groups blasted a yard at Metz. Bombing accuracy on all of these days⁴¹ was for the most part excellent.

From 9 through 14 August the Eighth's fighters and fighter-bombers had a field day. On 9 August the 353d, 359th, 364th, 356th, 78th, 4th, and 56th Fighter Groups together claimed the destruction of 53 locomotives, 38 freight cars, 12 trucks, 30 oil tank cars, and 6 goods wagons; damage to 79 locomotives, 203 cars and coaches, 26 trucks, 31 oil tank cars, and 103 goods wagons. In addition, numerous other transportation targets were hit, among them staff cars, a river boat, a bridge, and an armored train. Claims on the 13th were much higher, but did not equal those of the 12th when combined fighter claims were the greatest ever made for a single day: 208-0-128 locomotives, 735-0-1501 railroad cars, 197-0-107 oil cars, 205-0-133 trucks, 70-0-45 other vehicles, 6-0-45 barges, 9-0-6 bridges, 3-0-2 flak towers, 4-0-0 switch houses, 4-0-8 factories, 2-0-11 buildings, 4-0-3 roundhouses, 2-0-5 oil tanks, 4-0-0 water towers, 1-0-0 power house, and 16-0-0 soldiers.⁴²

On 15 and 16 August escorting fighters attacked transportation targets in Germany, and on 17 August the area between Brussels and Paris was bombed and strafed by fighter-bombers with good effect despite the bad weather. On 18 August 255 B-17's of the 1st Division struck seven bridges in Belgium southeast of Brussels with fair to good results, rail lines at Huy with unobserved results, and the Tongres marshalling yards with poor results. Twelve groups of fighter-bombers were dispatched to bomb and strafe transportation targets as well as airfields in the Senne

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River-Brussels area; results were good. From 19 to 22 August there were no operations because of bad weather, but on 23 August 163 P-47's from the 78th, 356th, 353d, and 56th Groups were dispatched to bomb and strafe rail transportation in northern France from St. Omer to Reims. Of those dispatched, 84 Thunderbolts dropped 21 tons of bombs on the Ham marshalling yard, hit 9 others, and strafed miscellaneous ground and river targets. On the next three days the heavy bombers hit strategic targets in Germany. On the 26th they also hit marshalling yards in Germany with good results, while fighter-bombers bombed and strafed rail lines in France and Belgium. On 27, 28, and 29 August fighters successfully strafed transportation targets in Germany, France, Holland, and Belgium. On the last of these days the same four fighter groups mentioned above plus the 479th bombed and strafed in northern France, Belgium, and western Germany, scoring direct hits on two trains headed south and west in the Brussels and Hazebrouck areas, respectively, carrying armored vehicles; the trains were set on fire, 40 vehicles were destroyed, and tracks were severed at many places. Weather conditions prevented any missions on 30 and 31 August.⁴³ The most significant evidence of Allied mastery of the air was the fact that relatively few enemy planes were encountered on these missions.⁴⁴

Weather conditions became worse in September, and it was more and more necessary to use blind bombing techniques. Less tonnage, therefore, was dropped and much of it was directed against targets of opportunity* rather than those of first priority.⁴⁵ Although there was no bomber activity on 1 September, the 353d, 356th, 56th, and 78th Fighter Groups

* But see below, p. 106.

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were dispatched to strafe transportation targets in the Brussels-Antwerp area and to bomb and strafe rail lines in northern and eastern France. Among them they claimed 94 locomotives, 99 railroad cars, 187 trucks, 52 military vehicles, 6 autos, and 1 oil car destroyed; 20 locomotives, 437 railroad cars, 104 trucks, 2 military vehicles, 11 autos, 15 tanks, 3 trailers, and 2 half-tracks damaged. After unsuccessfully raiding other rail targets in France and Belgium the following day, on 3 September 127 P-47's of the 353d, 356th, and 78th Groups got good results at Tilburg, Namur, and Cologne. On the 5th the bombers were over Germany again, on the 8th B-24's hit the Karlsruhe marshalling yard, and on the 9th they bombed the Mannheim yard with good results. Six groups of fighter-bombers were dispatched on 9 September, the 56th, 4th, and 361st to bomb and strafe shipping between the mainland and Schouwen, Overflakkee, and Walcheren islands and enemy installations on these islands, the 353d, 78th, and 356th to work over rail and road traffic east of the Rhine. Claims in both areas were fair. From 10 through 13 September the heavy bombers hit marshalling yards in Germany again, with results ranging from fair to good, and the fighters attacked miscellaneous transportation targets in Germany. ⁴⁶

Thus, during the early part of September although the total Eighth Air Force bomb tonnage was lower than in August, six times as many tons were directed against rail communications, many of them targets of opportunity. The concentration of effort against rail centers in southwest Germany reduced the capacity of these yards at a time when heavy demands were being imposed upon them by the German withdrawal from both northern and southern France. ⁴⁷

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On 11 September troops of the U.S. First Army, which were everywhere approaching the German frontier, crossed the border in force and reached the Trier area. Further crossings into Germany were made east of Eupen, and on 12 September thrusts had been made through the Siegfried Line in the Aachen area.⁴⁸ With the German withdrawal taking on the aspect of a general route, armed air reconnaissance of enemy road movements covered a succession of areas in line with and ahead of Allied advances.⁴⁹ By 12 September the enemy withdrawal up the Rhone from southern, southwestern, and central France was virtually complete, and the Allied northern and southern fronts had been joined in one long north-south line extending from Belgium to the Mediterranean near the border of France and Italy. The juncture of the Allied forces was effected on 12 September southwest of Nancy, and on 15 September the Allied armies of the north and south were unified under the Supreme Commander of the Allied Expeditionary Forces.⁵⁰

The Allied air forces succeeded in their plan of disrupting the rail communications which the Germans had theretofore been free to use in occupied northwest Europe. As a result of attacks on rail centers, the capacity of the lines in northern France, which was usually more than sufficient for the enemy's military and economic needs, had by D-day fallen to below a reasonable sustenance level. Consequently, to attempt to stem the Allied Normandy offensive, the Germans were forced to maintain a front-line strength greater than the logistical and transportation situation in northern France warranted. In fact, the trafficability of the main supply lines had reached a level lower than that by which the relatively small German occupation force in France had been

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maintained prior to D-day. One immediate result was that the enemy's LOC was more and more forced onto the roads--in spite of his very precarious fuel situation and the large-scale armed reconnaissance. Further, the residue of rail traffic that after D-day continued to trickle through the battered railway regions became, in general, easy prey for fighter-bombers, which had begun to operate in increasing strength a short time before the Allied landings. Attacks on bridges and open lines added to the chaos caused by the rail center attacks; before June had passed, organized rail movement in northern France had, by all accounts, practically ceased.⁵¹

In addition to slowing down the enemy's build-up of forces and demoralizing his troops, the Eighth Air Force in assisting the tactical air forces had seriously interfered with the German retreat from France. General von Rundstedt's staff officer for railway transport during this period stated that evacuation of supplies proved almost impossible not only because the lacked an evacuation plan but because of the difficulties imposed by the condition of the rail system. The general of Transportwesen West said that only 5 per cent of all supplies, and a haphazard selection at that, was evacuated from France, and that retreating troops were virtually banned from the rails.⁵² The first part of the systematic Allied destruction of enemy transportation was closed.

This of course is an arbitrary line of demarcation; for there was no distinct partition in the campaign. For the purposes of this study, however, it is convenient to consider the period from September 1944 on as separate, since it involves a problem in terminology which was largely absent from the previous discussion. Although transportation targets

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were listed in the target priorities for strategic operations from September 1944 on, it is difficult to determine whether or not all of them were strategic. As the ground forces proceeded deeper into Germany, more and more of these targets came within, or at least approached, the bounds of what have been considered above as tactical objectives. By a directive of 1 November 1944, transportation, the key to the enemy's entire military economy, was placed in second priority, after oil, as a strategic objective. It remained there until April, when it was elevated to top priority for the closing weeks of the war. Although attacks against these targets, except for a limited period in the early part of 1945 when the Ruhr interdiction program was in effect, were never carried out by the Eighth Air Force as a major, coordinated, strategic program,* approximately 34 per cent of the entire Eighth Air Force bomb tonnage during the war was dropped on the transportation system. The targets were either low-priority "fill-ins" and targets of expediency resorted to when the weather did not permit precision attacks on primary objectives, or the attacks were purely tactical, designed to interdict or slow up enemy military movements in coordination with Allied ground operations.⁵³

In view of this situation, the culmination of the Allied attacks on the German transportation system is presented here with the exception of missions which were unequivocally strategic in intention and execution.

At the beginning of October the Allied front line ran roughly along the southern Dutch border to the west of Eindhoven where the salient secured by the Arnhem-Nijmegen airborne landings[†] reached north into

* See above, pp. 105-6 for the incidence of transportation targets as targets of opportunity rather than primary objectives.

† See below, pp. 120-50.

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Holland; from Nijmegen the line then followed closely the German border southward to the southeast corner of Luxembourg and thence south again through Metz to the Belfort area.⁵⁴ At this time, the enemy's main requirement was an operating rail system from the Siegfried Line to western Germany and across the Rhine. This was needed not only to carry supplies and reinforcements but to keep mobile the forces already in the Siegfried Line area, so that they could be quickly moved to any area threatened by an Allied breakthrough.⁵⁵

With the approach of winter, the industry and coal of the Ruhr was of paramount importance to the rest of Germany. After the Ruhr, the Frankfurt-Mannheim zone was the most important industrial area in western Germany and also served as a vital military supply base. Transportation in the Cologne-Coblenz district was of importance for the supply of the Aachen and Moselle fronts as well as for the handling of iron ore traffic to the Ruhr. Immediately to the east of these three areas was the Kassel zone, which controlled rail traffic from all three to the industrial section of central Germany. To the south, the serving of the Lorraine and Vosges fronts depended upon movement through the Karlsruhe-Stuttgart net, and just to the east lay the Munich-Salzburg section which controlled traffic to Italy.⁵⁶

Operations through January 1945

From early October until the latter part of December some 105,444 tons of bombs were rained on marshalling yards and another 1,732 tons on bridges. Most of these operations, however, were of a strategic nature, building up to a concerted effort at isolating the Ruhr area preparatory to an Allied push into Germany. Although there were of course purely

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tactical missions in the enemy's rear areas most of these were accomplished by the tactical air forces rather than the Eighth, which was engaged for the most part in close-in air cooperation with the post-D-day ground operations in France.* The period was generally characterized by poor bombing weather which hampered the heavies considerably, but despite this such transportation targets as Cologne, Hamm, Munster, Rheine, Coblenz, Bingen, Mannheim, Friburg, Karlsruhe, Stuttgart, Saarbrucken, Kaiserslautern, Kassel, and Frankfurt were all delivered heavy blows.⁵⁷ After 16 December when the Germans began their Ardennes counteroffensive, the Eighth Air Force was diverted almost entirely to tactical operations,[†] especially in the area just west of the Rhine. The enemy's avenues of supply into the bulge area were successively denied him one by one as the heavy bombers and fighter-bombers concentrated on bridges across the Rhine. Once the German counteroffensive had been contained, however, those bridges, and others, took on even greater significance as escape routes for the retreating Wehrmacht.

Accordingly, air attacks against them were undertaken by the Eighth's heavy bombers on an increased scale during January and February 1945. By the end of the former month all rail traffic across the Rhine at Cologne was completely, if temporarily, severed: the south railway bridge, which had been destroyed, was still lying in the river and reconnaissance photographs of the only other bridge available for rail traffic, the Hohenzollern, showed that although the bridge itself had escaped undamaged, all tracks on its west approaches had been cut. In this area also, the Rodenkirchen road bridge, previously damaged, had completely

* See above, Chapter III.

† See above, pp. 74-86.

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collapsed and its wreckage was blocking river traffic. The Remagen rail bridge, hit twice, was heavily damaged and impassable, as were also the Hindenburg Bridge at Rudesheim and the Maximiliansau rail bridge. In making these attacks, the Eighth Air Force had dispatched 1,700 heavy bombers which dropped 5,113 tons of bombs.⁵⁸ During the following month the two bridges at Wesel were each attacked twice, the road bridge being severely damaged on 24 February and rendered impassable by cuts made on the approaches. A heavy attack on the road and rail bridge at Mannheim succeeded in making it temporarily unserviceable by completely smashing the railroad lines on the approaches.⁵⁹

More important, February saw the opening of a plan to isolate the Ruhr from central and southern Germany. This was to be achieved by drawing an interdiction line in a rough curve southward from Bremen to the Rhine at Coblenz. Along this line were 18 rail bridges and viaducts, the destruction of which, it was estimated, would cut every main rail line leading out of the Ruhr to the rest of Germany. The three lines running through Bielefeld, Altenbeken, and Arnsberg were calculated to carry 50 per cent of the rail traffic out of the Ruhr and were thus of greater importance than the others.⁶⁰

On 21 February 1945 a series of attacks was begun against these selected targets. From that day to 24 March, 40 attacks by heavy and medium bombers, drawn from those not engaged on their priority tasks of attacking oil and army cooperation targets, were made on these bridges and viaducts. A total of 1,792 bombers participated and dropped 5,657.4 tons of bombs; 702 of the planes were from the Eighth Air Force, which

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made 8 of the 40 attacks and dropped 2,023 tons of bombs. Three attacks were made against the viaduct at Bielefeld on 28 February and 7 and 10 March; two against the viaduct at Arnsberg, on 28 February and 10 March; and one each against the railroad bridges at Nienburg, 3 March, and Vlotho and Bad Oeynhausen, 14 March. In addition, the large number of fighter-bomber attacks made on these bridges succeeded in cutting the approaching rail lines and harassed the enemy efforts at restoration. Of the 18 bridges and viaducts, 10 had been destroyed by 24 March, 4 very seriously damaged, and 2 others damaged but probably passable. The last-mentioned two, at Vlotho and Colbe, had been rendered impassable some of the time during the period, and in the case of the former, the destruction of another bridge to the northwest on the same line had minimized its importance. The two bridges at Neuwied and Dottesfeld were suspended from air attack when they came within range of artillery from the Remagen bridgehead; they had also lost some of their importance as a result of the cutting of approach lines at Siegen.⁶¹

The success of the Allied air forces in thus isolating the area west and north of the interdiction line may be said to have prepared the way for Operation VARSITY, the crossing of the lower Rhine on 24 March.* Not only had the vital rail traffic out of the Ruhr been interrupted, but the enemy had been crippled in his attempts to make large-scale movements of reinforcements and military supplies from central and southern Germany to the German armies on the lower Rhine and in the Ruhr. Also in March, preparatory to VARSITY, was the interruption of enemy rail and road traffic west of the interdiction line and the more or less permanent dislocation

* See Operation VARSITY, Chap. VI for further information.

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of a very large number of marshalling yards and railway repair and maintenance centers. In all, 115 attacks by 10,498 medium and heavy bombers were made, in which 31,635 tons of bombs were dropped. Of these attacks, 34 were made by 3,168 Eighth Air Force bombers which dropped 7,733.6 tons of bombs.⁶²

On 3 March Bielefeld railroad center was hit by 210 tons from 73 bombers of the 2d and 3d Air Divisions flying in two forces. On 7 March Soest, Siegen, and Paderborn marshalling yards were hit by the 1st and 2d Divisions; Betzdorf, Siegen, Dillenburg, and Essen were struck by the 2d Division on the 8th; and on the 9th, Munster, Osnabruck, and Rheine marshalling yards, again by the 2d Division. On 14 March Holzwickede, Gutersloh, Lohne, and Osnabruck were bombed by the 1st and 2d Divisions, Munster on 17 March by the 2d. Photographic reconnaissance showed a very high degree of success in the destruction of permanent maintenance facilities, the cutting of lines, and the smashing of sorting and marshalling yard facilities in the centers bombed.⁶³

In addition to railroads and roads the inland waterways of Germany had always played an important part in her internal transport economy, but with the step-up of war production and the strain placed on the German railway system by Allied air attacks, the waterways assumed a strategic value out of proportion to their intrinsic worth. Chief among them were the Mittelland and the Dortmund-Ems canals, which carried a large proportion of the economic traffic of the Ruhr and formed the main east-west means of transporting heavy goods. In the period from October 1944 to February 1945 both became prime targets for a number of Allied air attacks and were breached successfully on several occasions.⁶⁴

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On 26 October 1944, 242 2d Bombardment Division B-24's escorted by 139 P-51's dropped 848 tons of bombs on the Mittelland Canal aqueduct where it passed over the Weser River at Minden. Subsequent reconnaissance showed that the aqueduct remained intact, but some 200 yards to the east the wall of the canal was broken; at least five barges were carried into nearby fields by the floodwaters, leaving the canal and the connecting lock to the Weser River dry. Again on 6 November 209 B-24's of the 2d Division escorted by P-51's of the 479th, 361st, 4th, and 357th Fighter Groups dropped 667 tons of bombs on the canal at Minden, this time with the loss of one bomber. Several direct hits were scored, one pier was severely damaged, and two craters were made in the bed of the aqueduct. The third attack by the 2d Division took place on 6 December when 140 B-24's dropped 386.2 tons of bombs on the Minden aqueduct. The three attacks succeeded in keeping the canal cut for some time after each attack and very seriously increased the enemy's difficulties in transporting his heavy goods.⁶⁵

With the rapid crumbling of the enemy front west of the Rhine during March, the Rhine bridges still remaining were all destroyed, except the rail bridge at Remagen which was captured by the U.S. First Army. The last two bridges left in enemy hands were those at Germersheim and Speyer, both of which were destroyed on 24 March, the first by ground demolition and the second by an air attack.⁶⁶

Although Allied air attacks could not be said to have cut even the majority of the available Rhine crossings at any one time, the continuous blasting of first one bridge and then another imposed a serious handicap on enemy traffic crossing the Rhine. This handicap together with the

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persistent attacks on railheads along the Rhine Valley had necessitated considerable diversion and rerouting of vital military traffic and had made necessary on numerous occasions heavy transshipments with their inevitable delays, congestion, and confusion.⁶⁷ Roads by this time were a negligible factor because of the scarcity of gasoline and the inadequacy of the few available horse-drawn vehicles. The railroads were the vital element of the German transportation system, and as they became inoperative, so did the German war machine.

Operation CLARION

All throughout this period the Allied air forces had been concentrating their attacks on a number of clearly defined rail centers, as has been amply proved in the previous pages in this chapter. During December 1944, however, consideration had been given a plan whereby, under favorable weather conditions, Allied air power might deliver a blow of a different kind, more widespread in nature, at the general organization of the Reichsbahn.⁶⁸ This plan (later called CLARION) envisaged an all-inclusive attack by 7,000 or more aircraft over the whole of Germany, for the purpose of disrupting in one fell swoop as much of the enemy's LOC and transportation as possible. By making a simultaneous attack with all available forces, SHAEF hoped that damage to transportation centers would be so extensive and comprehensive that the capabilities of normal repair organizations would be overwhelmed. Incidental to this, but nonetheless germane to the basic plan, was the belief that forcing the enemy to use his motor transport to carry out high priority movement would further deplete his carefully conserved oil stocks.⁶⁹

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It was known that Allied air attacks on specific rail centers, marshalling yards, locomotive and repair centers, and other major railway points had succeeded in imposing a great strain on the whole German rail system. It was also known--and this had been proved by the campaign in France--that considerable disruption could be caused by damage to signals, railway stations, and other relatively small and apparently unimportant local centers. Nevertheless, despite the immense damage which had been done and was being done to the German rail system in addition to the cumulative effect of strain which was being brought about by Allied air power, the Reichsbahn organization was still able to maintain itself as a going concern. The enemy's repair and maintenance facilities, although undoubtedly hampered, had displayed a remarkable capacity for restoring damage done by air attacks. Invariably, within a reasonably short time after bombing, sufficient lines were opened to keep through traffic running. If this repair organization could be stretched to a point where it was no longer capable of coping with the damage inflicted, a breakdown of the whole system might be effected. Fundamentally, it was this consideration which led to the CLARION proposal.⁷⁰

There were certain other considerations which lent weight to the plan. It was hoped that the rail cuts and the general dislocation produced would seriously disorganize the planned movements of enemy reinforcements and supplies to the various battle fronts. Such large scale and widespread attacks concentrated in a single day's operations might precipitate a crisis amongst the staff and workmen of the German rail system, whose morale was known to be shaken. A large number of small towns

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and villages throughout Germany which had previously escaped bombing would be attacked and new segments of the German populace would have brought home to them the striking power of the Allied air forces.⁷¹

On the other hand there were certain serious difficulties in the implementation of the plan. For one thing, the consequences could not be predicted with complete accuracy and the diversion of heavy and medium bombers from their successful attacks on selected priority targets might be a waste of effort. The cost in terms of aircraft and trained aircrews might be very high in spite of the fact that the targets to be attacked were by their nature likely to be lightly defended or not defended at all. If the maximum effect were to be achieved, it was imperative that the attacks be made by small numbers of bombers at low levels over very wide areas of Germany; complete surprise was a prerequisite and weather conditions must be suitable. No less important, and certainly not less vehemently stressed, was the traditional air force opposition to indiscriminate bombing of civilian population--in this case unavoidable if CLARION were approved as set up. After due consideration of all these problems, it was decided to complete arrangements and put the plan into operation when priority commitments and the best possible weather conditions permitted. For one or the other of these reasons, it was not possible to carry out the plan until 22 February 1945.⁷²

For CLARION the Eighth Air Force scheduled 25 primary targets with forces of one or two groups assigned to each: the 1st Air Division was detailed to the northern sector with 8 targets; the 2d Air Division was allotted the central sector with 9 targets; and the 3d Air Division was given the southern sector with 8 targets, including one at Eger in western

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Czechoslovakia. The marshalling yards selected were medium sized, located in towns of 15,000 to 25,000 population, many key transportation centers with up to five converging rail lines. It was believed that the element of surprise could be achieved and that enemy opposition in the air would be discouraged by having the bombers penetrate midway to the targets in their usual large formations and at standard operating altitudes, and then break off into the smaller groups necessary to insure complete coverage of the briefed target system. The 15 available Eighth Air Force fighter groups--14 of P-51's and 1 of P-47's--would all be needed for support of the bombers, especially since they would bomb in small units and from low altitudes. Five P-51 groups were assigned to provide close escort for the 1st Air Division, three were to join the bombers on the east shore of the Zuider Zee on penetration, and two others were to rendezvous shortly before the formation reached the Dummer Lake area. Five fighter groups--one P-47 and four P-51--were assigned to escort the 2d Air Division, and three P-51 groups were detailed to support the 3d. They were to meet the bombers just west of the Rhine and continue with them through the target and on withdrawal. In addition to the groups assigned to close escort, two P-51 groups were to patrol the areas in which enemy fighters were most likely to concentrate, one from the outskirts of Berlin north to Murtitz Lake and the other in the Dessau-Magdeburg-Leipzig area. The group operating in the north was to give withdrawal support to the 1st Air Division and the one patrolling in the south was to augment the withdrawal support of the 3d Air Division.⁷³

Every effort was made by all air forces to launch a maximum number of

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planes on 22 February 1945, and approximately 8,000 Allied aircraft dropped some 8,500 tons of bombs on over 200 specific stationary targets. More than 500 locomotives and 3,000 railroad cars and trucks were destroyed and damaged, and at least 65 enemy aircraft of the small force opposing were either destroyed or damaged. Allied losses, most of which were attributed to antiaircraft fire, totaled less than 1 per cent of the forces employed.⁷⁴ The German Air Force had failed to capitalize on probably its best opportunity for interception of the Allied air Forces.⁷⁵

The Fifteenth Air Force attacked targets in Austria and southern Germany. The American First Tactical Air Force hit targets in the section east of Strasbourg, particularly on the lines between Mulhouse and Stuttgart and between Ulm and Friedrichshafen. The British Second Tactical Air Force struck targets in Holland, on the lines north of the Ruhr, including the Osnabruck, Bremen, and Emden areas, and on the lines from Hanover to Hamburg, as well as in the Kiel and Flensburg areas. The Ninth Air Force attacked targets in the areas southward to Osnabruck and through the Ruhr, covering Paderborn, Kassel, Frankfurt, Mannheim, and Karlsruhe.⁷⁶ The Eighth Air Force struck chiefly in the area east of Hamburg and Hanover, 1,359 bombers (of 1,411 dispatched) hitting rail centers in the Brunswick, Magdeburg, Berlin, Leipzig, and Dresden areas with 3,833.5 tons of bombs. Seven bombers were lost, while 85 sustained battle damage, mostly from antiaircraft fire; the gunners made only one claim against the few enemy aircraft opposing.⁷⁷ Fighter participation, including weather scouting forces, amounted to 865 sorties, 822 of which were effective. There were 13 fighter losses and 17 cases of battle damage. Claims against airborne enemy aircraft totaled 7 destroyed, 2

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probably destroyed, and 19 damaged; against parked aircraft, 22 destroyed and 22 damaged.⁷⁸

The 1st Air Division had detailed 12 B-17 groups of 36 aircraft each to attack eight marshalling yards in the Hamburg-Berlin area; the 2d Air Division dispatched 46 B-24 squadrons of 10 aircraft each to attack nine marshalling yards in the Hanover-Leipzig area. This latter force, some of which went as low as 5,000 feet because of clouds, encountered anti-aircraft fire between Bebra and Eisenach, but the most damaging fire was experienced by groups which flew a few miles east or west of their course. In the two forces 875 aircraft flew effective sorties, dropping 2,406.7 tons of HE and 1.5 tons of incendiaries with generally good results. One B-17 and four B-24's were lost, the former a victim of the only instance of enemy aircraft opposition, a single Me-262.⁷⁹

Twelve groups of fighters executed supporting assignments and P-51 weather scouting forces operated in advance of each of the two bomber forces. In all there were 682 sorties, 643 of which were effective. The 10 fighter groups assigned as close escort to the two forces made rendezvous at or near the planned point--the Zuider Zee in the case of 6 groups and Dummer Lake for the remaining 4. Eight of the escort groups reported encounters with small, widely scattered forces of jet-propelled Me-262's (40 to 50 in the target areas); 4 of the jets were destroyed and 13 damaged for the loss of 1 P-51. No ground defenses were active at any target except Eschwege, a target of opportunity. One squadron of fighters from the 364th Group, carrying out strafing attacks near Bremen, was bounced by 25 to 30 single-engine enemy aircraft with markings strikingly similar to those of Allied aircraft. This surprise attack was very

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aggressive, but the P-51's destroyed three, probably destroyed two, and damaged six for the loss of one P-51. All groups, five supporting each bombardment division, continued through the target area except two flights which broke off during penetration to make strafing attacks against airfields and transportation targets. As the bombers reached the target, two more flights from the 1st Air Division support broke off for strafing attacks, and the 353d and 55th P-51 Groups executed sweeps east of the target area as the bombers approached. The strafing attacks carried out against airfields, road, rail, and water transport facilities were very successful and the numerous claims included 22 parked aircraft destroyed and 21 damaged. Ten P-51's failed to return: one lost to anti-aircraft fire, one to attack by jet-propelled aircraft, one to attack by conventional enemy aircraft, one to accident, and six to unknown causes. Claims against airborne enemy aircraft were 7 destroyed, 2 probably destroyed, and 19 damaged.⁸⁰

The 3d Air Division ran into a front of layered middle cloud extending from 6,000 to 20,000 feet with moderate haze between layers. When the clouds failed to dissipate, the lead group took the formation above the overcast, except for two groups which remained at medium altitude. Because of the disorganization caused by the poor visibility, several groups, separated from the others, turned back short of the main target in search of alternates. Bamberg, one of the two most southerly targets, was the only assigned primary attacked (by elements of the 493d, 385th, and 95th Bombardment Groups); 13 squadrons hit Ansbach, an assigned secondary but not for the particular units attacking, 5 of them from the 94th and 486th Groups attacking visually from 6,300 to 7,300 feet. The other attacks in this area were carried out by H2X.

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Eleven squadrons held their bombs until they reached the extreme southwestern portion of Germany where weather conditions were much improved and most of the bombing was visual from 6,000 to 23,000 feet. A total of 484 3d Division B-17's made effective sorties to drop 1,425.2 tons of HE. When one B-17 straggler was attacked south of Stuttgart by a solitary Me-262, the gunners on the bomber opened fire and observed strikes on the fuselage. Two B-17's were lost, one to accident and the other to unknown causes, while claims were limited to that against the Me-262.³¹

Of the three P-51 groups (357th, 339th, and 78th) assigned to escort the 3d Air Division, only two and a part of the third made rendezvous in the area between Metz and Strasbourg. The missing fighters were unable to locate the bombers and let down through the undercast to strafe in the target area. The escorting fighters remained above the overcast so that bombers attacking beneath the clouds or between cloud layers received only the equivalent of area support. Two P-51 groups covered the bombers past the battle line and back to the Strasbourg-Metz area, although elements of each left the bombers over Germany to conduct strafing attacks. The part of the third group which had escorted during penetration and in the target area broke off near Stuttgart to attack ground objectives, but the unit of this group which had previously failed to make contact and a stray squadron from another group each located portions of the bomber force near the Rhine on withdrawal and provided escort to the Belgian coast. A scouting force of eight P-51's was employed in addition to the fighter support. In all, 183 P-51's sortied, 179 of which were effective. One P-51 group sighted three Me-262's which

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declined combat, but the 78th Group strafed an airfield and damaged a parked aircraft. Extensive claims were made against locomotives, rolling stock, and military vehicles, while only three P-51's failed to return.⁸²

During the day's operation, 32 rail communications targets were attacked by the Eighth Air Force; of the 124 squadrons dispatched, 96 attacked visually, 65 hitting assigned primaries or secondaries and the other 31 striking last resort targets. From an analysis of strike photographs showing the results achieved by 76 of the 96 squadrons attacking visually, it was found that the accuracy achieved in this operation was substantially higher than the average obtained in reasonably good visibility during the preceding five months. Lower bombing altitude and smaller attacking forces undoubtedly explained to a great degree the marked difference.⁸³

Available information, chiefly from intercepted wireless traffic, indicated that the Allied bomber forces had been fully plotted, the 1st and 2d Air Divisions from the time of their assembly over East Anglia, but the enemy apparently failed to realize that the formations were to be dispersed at the last moment to attack over a wide area. Although the Luftwaffe was admittedly on its last legs, this misconception by German intelligence no doubt accounted in part for the small scale of enemy activity: not more than 10 enemy aircraft of all types were sighted by the Fifteenth Air Force in southern Germany, and the RAF Bomber Command daylight mission against the Ruhr was entirely unopposed.⁸⁴

On the day after CLARION Eighth Air Force bombers dropped 3,327 tons of bombs as a follow-up, incidentally providing the GAF a chance to offset the previous day's poor showing. The Luftwaffe again declined: no enemy aircraft opposed the bombers, although intercepted wireless messages

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indicated that a small number of jets were airborne in what was probably an attempt at interception. Since the southern part of the GLARION target area assigned to the 3d Air Division had been almost entirely cloud-obscured, and since visual conditions were expected on the 23d, the same marshalling yards plus some additional ones (18 in all) were assigned the three Eighth Air Force divisions on that day. The 2d Division had to bomb by H2X but the other two made visual attacks. One B-17 ditched in the North Sea, and another, badly damaged by antiaircraft fire, was flown back to friendly territory where the entire crew bailed out; the aircraft, on automatic pilot, was aimed back toward enemy territory. In addition, five bombers were severely damaged, two B-24's from a slight mid-air collision and the others from crash-landings.⁸⁵

Since heavier air opposition was expected on the 23d, all 15 available Eighth Air Force fighter groups were used again. Twelve P-51 groups were to furnish close support, four to each division, and the three other groups were to sweep ahead of the bombers, patrol the target areas, and withdraw with the bombers, two with the 2d Division and one with the 3d and 1st. When weather conditions kept the two Belgium-based P-51 groups from operating, the 56th and 355th Groups, scheduled to sweep the target area, were reassigned as close escort groups. The one P-51 group left to sweep joined the 3d Air Division on withdrawal. Fighter sorties, including the three weather scouting flights, totaled 707, of which 674 were effective. Contrary to expectations, only a few jet aircraft were sighted by the fighters and they evaded in every instance. The only aerial combat took place when the 364th Fighter Group located 20 to 25

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Me-109 fighter-bombers assembling over an airfield near Stuttgart. Five of the Me-109's were destroyed in the initial attack and when the rest scattered, the P-51's withdrew temporarily to await their return. The ruse was successful: when the 364th came back, they shot down two more enemy aircraft attempting to land and damaged one other on the ground. Upon completion of their escort duties, strafing attacks were carried out by elements of all groups except the 56th, and substantial claims were made, including 15 parked aircraft destroyed and 16 damaged; 8 P-51's failed to return.⁸⁶

These attacks officially closed CLARION. No general collapse of the Reichsbahn was apparent: although immediately serious dislocation throughout the German transportation system was evident, the more indirect results which had been hoped for were not realized. There was no prolonged breakdown of the enemy's railway repair organization, no significant repercussions among the railroad staff, and no evidence, in the short view, of a weakening of general civilian morale. Nevertheless, the attack caused some, and in places, considerable redistribution of the German antiaircraft defenses and was much less costly than had been anticipated.* These facts, while they raised doubts as to the advisability of repeating such an attack, proved that the Germans were vulnerable to this type of operation.⁸⁷

Interdiction for the Russian Armies

In January 1945 it was decided by the CCS on recommendation of the Eighth Air Force to assist the Russian forces by destroying the supply line of the German ground forces on the eastern front.⁸⁸ Soon after the

* See below, Chap. IX, for the effect of CLARION on the subsequent Rhine offensive, GRENADE.

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opening of the Russian winter offensive it had become evident that Hitler was switching forces in an attempt to bolster his tottering eastern front. In direct concert with Russian armies, therefore, heavy attacks were laid on the important centers of Dresden, Chemnitz, and Cottbus, the latter only 15 miles from the Russian forward positions, despite the fact that for some time the Fifteenth Air Force, operating from the Mediterranean, had been concentrating its attacks on communications targets in those centers, the backbone of the lines serving the German Balkan front. The Eighth's fighters were also sent to strafe rail lines over which enemy troops were moving from the western to the eastern front.⁸⁹

The attacks on Dresden and Chemnitz were coordinated between the night and day bomber forces. After Dresden had been attacked on the night of 13 February, 461 Eighth Air Force heavy bombers were dispatched against its marshalling yard on 14 February. Of these, 311 B-17's of the 1st Air Division dropped 771 tons of bombs while losing 4 of their number. Escorting the whole force, which also hit other targets, were 316 P-51's; they engaged in combat with 25 to 30 FW-190's and Me-109's and claimed 10 destroyed, 1 probably destroyed, and 6 damaged for a loss of 3 P-51's. On the same day a 3d Division force of 294 B-17's (out of 441 dispatched) struck the Chemnitz marshalling yard with 718.5 tons of bombs, one week after the yard was blasted by 474 of the Eighth's planes which hit it as a secondary. On 15 February the Cottbus marshalling yard was hit, also as a secondary target, by 435 Eighth Air Force bombers which dropped 1,064.5 tons of HE. Escorting this force 153 P-51's

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sortied and claimed as destroyed the only two enemy planes which offered combat. No fighters were lost but 11 B-17's failed to return.⁹⁰

Since Berlin was the center of German transportation, it was a decided advantage to the Russians to have marshalling yards and stations in that vicinity bombed. Obliging, the Eighth Air Force hit the Tempelhof yard on 3 February with 2,266.7 tons of bombs; in all, 937 heavies participated in two forces. Results were very good but heavy enemy anti-aircraft defenses in Berlin shot down 26 B-17's as well as 8 of the 613 supporting fighters. Three railroad stations in Berlin were pounded on 26 February by 1,184 heavies which dropped 2,886.2 tons of bombs, the heaviest daylight attack ever made on the Reich capitol. Thirteen bombers were lost, and although there was no fighter opposition, 2 P-51's of the escorting 694 fighters were shot down.⁹¹

On 12 March, after the Russians had requested the bombing of Swinemunde, an important seaport on the Baltic, 677 Eighth Air Force heavies were dispatched and 661 of them dropped 1,608.5 tons of HE on the port area with great success despite the 10/10 cloud. The only enemy planes encountered by the 452-plane escort were 5 Me-109's which put up a brief fight with the 339th Fighter Group, only to lose 4 of their number and have the other damaged. No bombers or fighters were lost by the Eighth.⁹²

A rail campaign analysis considered alone tends to create the impression that the defeat of Germany from an economic as well as a military standpoint is primarily attributable to the attack on rail targets. Without air superiority, however, such attacks would have been impossible;

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without the strategic bombing of industry and its consequent dispersal, the rail system would not have had so many demands made upon it; and had it not been for the bombing of POL, the Reichsbahn would not have remained as the only major means of transportation. Nevertheless, it is undoubtedly true that the innumerable attacks on rail transportation by the Allied air forces contributed materially to the final collapse of Germany. Although the tactical effect upon movement of troops and military supplies was probably the most important, the cumulative effect on the German military economy must likewise have been very large. In substantiation of these conclusions, General von Rundstedt stated that the dislocation of Germany's railroad system by air attack was one of the main reasons for her losing the war, yielding precedence only to her loss of air superiority and the destruction of oil supplies.⁹³

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Chapter V

AIRBORNE OPERATIONS AND SUPPLY DROPS

France had been liberated, Belgium overrun, and the retreating German armies had dug in behind the Siegfried and Maginot lines along the Belgian-Dutch border. The British, following close on their heels, had crossed the Dutch border below Eindhoven but there found themselves confronted by two river barriers and a series of canals. At Arnhem, north of the Eindhoven-Nijmegen axis, the Rhine is divided into two parts, the Waal and the Lek rivers. Beyond lay the German forces. The Allies decided to seize the bridges over these rivers by means of airborne landings which would pave the way for link-ups with the advancing ground troops. Two operations--LINNET and COMET--were scheduled and later canceled following several postponements caused by either the ground situation or the weather, but out of these grew Operation MARKET.¹

Operation MARKET, the Arnhem Drop

The plan for MARKET, the largest airborne operation to date, directed that the First Allied Airborne Army support 21 Army Group in a thrust into Germany across the lower Rhine. The airborne troops were to capture vital bridges over the Maas, the Waal, and the Neder Rijn in front of the British Second Army, which was advancing from its bridgehead across the Meuse-Escaut Canal in Belgium.² The command of the whole force was vested in 21 Army Group through the British Second Army; First Allied Airborne Army was given operational control of the airborne and troop

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carrier forces.³ D-day for MARKET was to be not earlier than 14 September 1944, and it was scheduled as a daylight operation. If the weather permitted, the airborne movement of the First Allied Airborne Army task force was to take place in three main lifts on three successive days.⁴ The American 101st Airborne Division was to be dropped between Eindhoven and Veghel where they were to seize bridge in the area between Eindhoven and Grave. The American 82d Airborne Division, whose mission was to capture bridges over the Maas at Grave and over the Waal at Nijmegen, were to be landed between the two rivers, southeast and southwest of Nijmegen. The British 1 Airborne Division and the Polish Parachute Brigade were to be dropped on the north side of the Neder Rijn, west of Arnhem and on the south side of the river opposite the city, where they were to seize the bridges for the crossing of the Guards Armoured Division leading the attack of 30 Corps (British Second Army). After the crossing was made the airborne troops were to protect the sides of the corridor formed by these ground forces.⁵

On 16 September it was announced by AEF Headquarters that MARKET would take place on 17 September; two routes were to be used. RAF Bomber Command was to attack four enemy fighter airdromes on 16 September, attack flak positions on the bridge over Hollandschdiep on the night 16/17 September, and stage dummy parachute drops outside the cover area on the night 17/18 September. The Eighth Air Force was to furnish cover for the airborne forces on D-day and attack flak positions on the northern route from the initial point to drop and landing zones and on the return to the initial point. They were also to neutralize antiaircraft

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defenses on the northern and southern routes prior to carrier operations and perform a resupply mission on 18 September. Air Defence of Great Britain (ADGB) was to cover the troop carriers on D-day and attack flak positions on the northern route from England to the initial point at Ellis Center and on the return. They were also to furnish air-sea rescue service for both routes and night-fighter protection of landing and drop zones on the night of 17/18 September. RAF Coastal Command was to perform diversionary missions outside the area and routes of the airborne operations. The Ninth Air Force on D-day was to attack enemy antiaircraft defense positions on the southern route and to protect the troop carriers between the initial point at Delos Center and the drop and landing zones in the Eindhoven area and return. RAF 2 Group was to attack barracks in the drop and landing zone area just prior to carrier operations. The British Second Tactical Air Force was to perform armed reconnaissance and protect the battle zones against enemy day fighters during the time the Eighth and Ninth Air Force fighters were not in the area.⁶

In order to fulfill its first major assignment--the destruction and neutralization of light and heavy antiaircraft positions along the airborne route and in the drop and landing zones--the Eighth Air Force had to perform two different types of operations. The first was a heavy bombardment attack against the known antiaircraft installations at the latest possible time before the arrival of the troop carriers on D-day; the other was a dive bombing and strafing attack against antiaircraft positions exposing themselves directly before and during the passage of the airborne

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forces. This last type of support was to be furnished, in conjunction with ADGB and Ninth Air Force fighters, on D-day and thereafter until the completion of the operation. The Eighth's second major assignment was to furnish escort and cover for troop carrier aircraft from D-day until the conclusion of Operation MARKET. In addition to these assignments the Eighth was to reconnoiter the route of the airborne forces in order to locate stationary antiaircraft positions before the heavy bombardment program on D-day. They were also to employ approximately 250 heavy bombers in a resupply mission on D plus 1, as well as supply a few planes for radio-countermeasure missions on the night 16/17 September in association with RAF 100 Group. Weather and photo-reconnaissance units of the Eighth were scheduled to play their usual roles.⁷

Two different routes had been contemplated in the plans for MARKET: a northern route which was generally favored by the air forces because it was thought less flak would be encountered, and a southern route which, from the initial point on, led directly over the enemy front lines. Ground forces, however, had equalized both routes by D-day as far as antiaircraft positions were concerned,⁸ although early on the morning of 17 September a change was made on the southern route between the Belgian coast and the initial point to avoid an enemy pocket south of the Schelde.⁹ As early as 6 September armed reconnaissance of the Arnhem-Nijmegen areas and the general line of approach along the Waal River had been made by the Eighth Air Force. It was discovered that by 11 September flak dispositions had increased 20 per cent,^{*} which was not unexpected since the enemy had been given an opportunity to regroup his artillery. Although

* The report, First Allied Airborne Army's Operations in Holland September-November 1944, states that flak was known to have increased 35 per cent by D-day, 17 September.

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flak estimate surveys showed that air landing operations performed in daylight against such heavy flak defenses were extremely hazardous, it was believed that if surprise were achieved, the operation had a good chance for success.¹⁰ While reconnoitering these gun positions, the Eighth discovered that some of them lay in and around cities and towns, one of which was Arnhem. Since there were strenuous objections to bombing built-up areas, they were not included as targets for the heavy bombers. Concentrations of antiaircraft guns were also found on bridges against which bombing had been forbidden by SHAEF.¹¹ A clarifying decision was requested and on 16 September the bridge targets were cleared by a message from AEF headquarters, even though it was recognized that bombing the gun positions would probably destroy the bridges.¹²

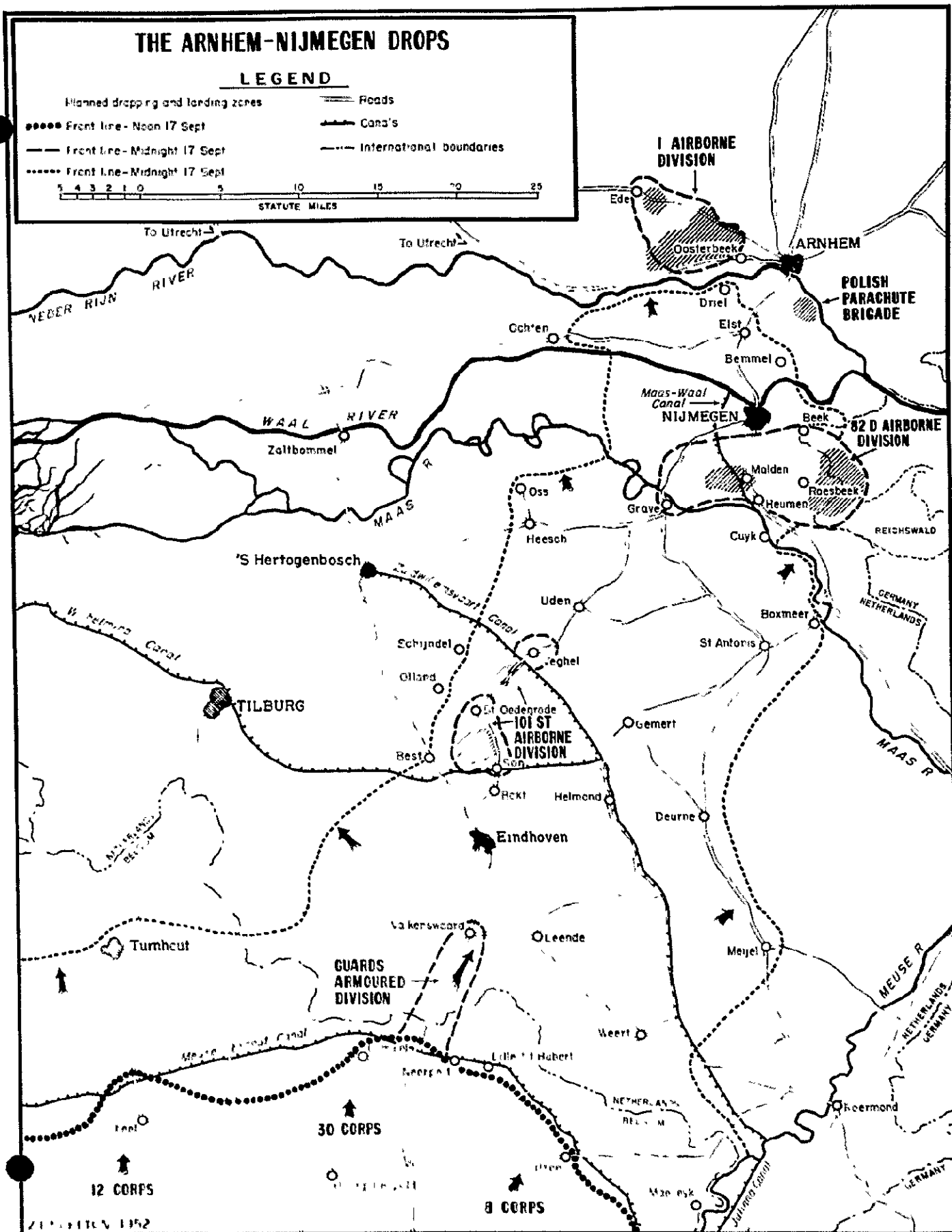
The initial blow of MARKET was struck on the night 16/17 September 1944 by 282 RAF bombers whose targets were four airfields--Leeuwarden, Steenwijk/Havelte, Hopsten, and Salzbergen--from which the enemy would ordinarily operate against the airborne invasion, and antiaircraft positions at Moerdijk bridge where the most concentrated defenses along the northern route were located. In connection with this mission, six RAF and five Eighth Air Force planes operated on a radio-countermeasure mission to jam enemy detecting devices.¹³ On the following morning 100 RAF bombers escorted by 53 Spitfires hit three coastal defense batteries in the Walcheren Island area, and just prior to the airborne operation, 872 B-17's of the 1st and 3d Bombardment Divisions were dispatched against 112 antiaircraft defense positions along the troop carrier routes. A total of 834 B-17's dropped 2,859.2 tons of fragmentation clusters and

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28.9 tons of HE bombs.¹⁴ Small amounts of cloud and haze accounted for 53 planes bombing alternate targets, but for the most part good visual conditions prevailed. No enemy aircraft opposed the operation, but 2 bombers were shot down by antiaircraft fire and 112 were damaged. Fighter support and weather scouting were furnished by 163 P-51's, only 1 of which failed to return.¹⁵

While the bomber operations were taking place over Holland, about one and a half full divisions with equipment were airborne over England. A total of 1,544 aircraft and 478 gliders divided into two trains, one taking the southern route and the other the northern. The dropping and landing operations were highly successful with 1,481 aircraft and 425 gliders completing their missions with the loss of 35 troop carrier aircraft and 13 American gliders, considerably below expectations.¹⁶ ADGB provided cover and flak neutralization as far as the initial point on the northern route, the Eighth Air Force taking over from there to the drop and landing zones. The Eighth also gave top cover on the southern route and put up a protective fighter screen east and north of the MARKET area. The 4th, 479th, and 364th Fighter Groups provided general support, while the 356th, 78th, 353d, and 56th Fighter Groups bombed and strafed ground defenses on the northern route. On the southern route the 352d, 361st, 357th, and 55th P-51 Groups gave general support from the Belgian coast to the drop and landing areas, while four P-47 groups of the Ninth Air Force provided flak neutralization support. In addition, the 355th and 359th Fighter Groups made perimeter patrols to intercept enemy aircraft approaching the drop and landing zones. Out of a total



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of 563 Eighth Air Force fighters dispatched, credit sorties were flown by 538 with 147 of these bombing. Twelve aircraft were lost and 49 battle damaged; 8 enemy aircraft were shot down by the 4th and 361st Groups, while total fighter claims were 59 antiaircraft and gun positions destroyed and 89 damaged.¹⁷

After the landings, the British Second Tactical Air Force provided ground support for the airborne troops; RAF Bomber Command performed two dummy drops in the areas west of Utrecht and east of Nijmegen near Emmerich; and ADGB furnished night-fighter protection for the airborne forces operating on the ground. Enemy aircraft opposition was weak, and although antiaircraft was heavy, the low loss ratio proved the effectiveness of the route planning, flak defense coverage by both bombers and fighters, and above all, the element of surprise.¹⁸

Paratroops of the 101st Airborne Division, which landed between Veghel and Eindhoven, quickly established their positions at the town of Son located between Eindhoven and St. Oedenrode, and although they were immediately opposed by eight enemy tanks, these were driven away or destroyed by air support. From there the 101st promptly pushed south to Bokt, four miles from Eindhoven, and north as far as Veghel, capturing the more important bridgeheads in the area including the one at Veghel. The 82d Airborne Division, dropped southeast and southwest of Nijmegen, seized intact the bridge over the Maas River at Grave and later two bridges over the Maas-Waal Canal between Grave and Nijmegen. Units of the 82d pushed north and entered the outskirts of Nijmegen but were unable to take the bridge there. As soon as 1 Airborne Division was dropped west of Arnhem, about 10 miles north of the 82d Division's units in Nijmegen, they were strongly opposed but did succeed in taking the

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north end of the bridge over the Neder Rijn. Approximately an hour after the landings, the Guards Armoured Division of the British 30 Corps began to advance from their bridgehead across the Meuse-Escaut Canal in the first step toward joining the airborne forces ahead. They were pre-coded by an artillery barrage on the Eindhoven road and supported by rocket firing Typhoons. Despite stiff resistance, by nightfall the Guards had advanced six miles to the village of Valkenswaard.¹⁹

On 18 September only the northern route was used since the weather had closed in on the southern. Although operations had to be postponed four hours on account of the bad weather, 1,360 planes and 1,200 gliders were finally airborne, and as they proceeded the weather improved until it was clear over the dropping areas. A total of 1,302 aircraft and 1,143 gliders fulfilled their assignments with great success; the loss ratio continued low with 3 British aircraft, 1 British glider, and 22 C-47's and 19 American gliders being reported lost.²⁰ ADGB provided support between the English coast and the initial point with the Eighth Air Force continuing from there. Six Eighth Air Force P-51 groups provided area support, two P-51 groups performed perimeter patrol, and two P-47 groups and one P-47 rocket squadron (assigned temporarily from the Ninth Air Force) engaged in flak neutralization. In the latter operation Allied planes were at a decided disadvantage since they could not fire on antiaircraft defenses until they or other Allied aircraft were fired upon. Enemy gunners quickly learned to exploit this situation by holding their fire until the fighters passed over, thus making it almost impossible to spot them. In addition, haze hindered dive bombing and seriously limited all bombing accuracy. Only two groups encountered

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enemy aircraft, the 357th claiming 26 from an enemy force of about 60 Me-109's and FW-190's for the loss of two P-51's, and the 359th Destroying 3 enemy aircraft and losing 2 of its P-51's when one of its flights ran into some 35 FW-190's. Other groups claimed 33 antiaircraft and gun positions destroyed and 4 damaged. Altogether 397 Eighth Air Force fighters were dispatched, 382 credit sorties were flown, and 7 planes were lost.²¹

On the same day 252 B-24's of the Eighth Air Force 2d Bombardment Division were dispatched to drop supplies to the 82d and 101st Airborne Divisions. Of these, 226 planes dropped 782 tons of supplies from altitudes of 200 to 500 feet with good to excellent results at Nijmegen and Eindhoven.²² Seven of the planes were lost to flak, 4 more crash-landed, and 70 others were damaged. The ground defenses constituted the only enemy opposition and bombers remaining on the deck on withdrawal suffered less battle damage than units climbing to the base of low clouds as briefed.²³ Fighter support was provided by the 20th and 479th Fighter Groups which gave close support from the Schelde Estuary to the drop zones and back. The 78th and 56th Groups operated on antilak patrols while the four P-51 groups which gave specific area coverage on the earlier mission remained until the B-24's had withdrawn. ADGB fighters also supported during withdrawal. Again the fighters were ordered not to fire at antiaircraft guns until fired upon, for the protection of friendly troops in the area. Visibility was still restricted which made accurate bombing difficult. A total of 192 credit sorties were flown by VIII Fighter Command, 21 planes were lost, and there were 17 cases of battle damage.²⁴

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The British Second Tactical Air Force answered a call for aid from the 82d Airborne Division which was experiencing a severe counterattack by enemy forces from the Reichswald southeast of Nijmegen. The Guards Armoured Division established contact with the 101st Airborne northwest of Eindhoven and the town was entered in the afternoon. In the Arnhem area 1 Airborne Division was engaged in severe fighting on the western outskirts of the town, and during the day they lost contact with 1 Parachute Brigade, which was holding out at the road bridge. Reinforcements were virtually surrounded by the enemy immediately after landing.²⁵

The 19th of September was to have been the day for the third and last scheduled lift, but deterioration of the weather reduced the effort to about one-half the planned size, even though H-hour was postponed in the hope that conditions would improve. Although the northern route was considered best from a weather standpoint, it was feared that a third mission over this route would find enemy ground defenses heavily reinforced. Consequently the southern route was used in spite of the weather. It was reported that in some instances tug aircraft flew on instruments and gliders could not see their own tugs. There was also a considerable increase in fire from ground defenses between the initial point near Herenthals and the objectives, but of the 226 transport aircraft and 428 tug-glider combinations dispatched, 217 aircraft and 245 tug-gliders reached their targets. Thirty-eight Allied aircraft and 73 American gliders were lost.²⁶ Fighter escort was furnished by only 1 of the 15 Spitfire squadrons dispatched by ADGB, the weather turning back the others. With closed-in bases only five Eighth Air Force groups out

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of seven were able to take off, and it was possible to marshal the fifth group only after the shift of a unit originally scheduled for a bomber support mission. There were 180 credit sorties flown by P-51's on area and perimeter patrols, 6 losses were sustained, and out of more than 100 enemy aircraft encountered, 23 were destroyed and 4 damaged. Of the four Ninth Air Force flak-patrol groups dispatched, only one was able to surmount weather difficulties, and in their absence the enemy ground defenses were very active.²⁷

By 0830 hours on 19 September the Guards Armoured Division had advanced to Grave and linked up with the 82d Airborne Division; armored cars reached the Waal River in the early afternoon. In the meantime the 82d was engaged in a fierce battle for the town of Nijmegen. Finally the Guards broke through into the town but the Allies were still unable to capture the bridge. To the north in the Arnhem sector the 1 Airborne Division was hard pressed by the enemy from both the east and the west, the 1 Parachute Brigade had become completely isolated at the bridge, and the 1 Air Landing Brigade was almost cut off near the river bank. Food and ammunition were scarce because most of the supplies dropped during the day had fallen into enemy hands. The 101st Airborne Division had fought hard all day and repulsed an attack by a German pocket panzer division against the bridge at Son. Enemy troops had infiltrated across the narrow corridor between Eindhoven and Grave and were driven back only with difficulty.²⁸

On 20 September the weather again necessitated a reduction in the scale of dropping operations which were confined largely to resupply.

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The progress of Allied troops along the Eindhoven-Arnhem line was such that the southern route was preferable. A last-minute change in the initial point (from Schijndel to Eindhoven) was made to avoid the anti-aircraft defenses of an enemy pocket. Of the 520 transport aircraft taking off, 507 reached their objectives and only 9 were lost, but flak in the Arnhem area was so intense and accurate that most of the supplies intended for 1 Airborne Division were dropped closer to and retrieved by the enemy.²⁹ With the operation being flown in two separate phases, for the first ADGB furnished three Mustang squadrons which gave escort and antiaircraft protection, while one P-51 group (the 357th) of the Eighth flew area cover; the second phase was supported by both ADGB and Eighth Air Force, the former escorting and giving protection from England to the initial point, the latter providing 11 P-51 groups (one a hybrid group of P-51's and P-38's) for general cover, 4 P-47 groups, and the Ninth Air Force P-47 rocket squadron for neutralization of ground defenses. The Ninth Air Force at the last minute was unable to provide its quota of fighters and instead of the two P-47 groups originally assigned, the Eighth reassigned other units from cover roles. Although a total of 678 Eighth Air Force fighters were dispatched, 645 of which received sortie credit, only 2 antiaircraft and gun positions were destroyed and 2 damaged; 1 P-51 was lost because of bad weather. No enemy aircraft were sighted by Allied planes, but some 25 enemy fighters took advantage of the restricted visibility and strafed British troops in the Arnhem area.³⁰

The ground battle progressed well at Nijmegen where the bridge was taken by the 82d Airborne Division in conjunction with the Guards

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Armoured Division--the Guards assaulting from the south while the Americans pushed through and attacked from the northern end of the bridge. In the rear the 43 Infantry Division closed up behind the Guards Armoured. The enemy continued to press against the supply and transportation corridor below Grave, but the 101st Airborne held out against them. At Arnhem the situation was acute. The weather had precluded any reinforcements being dropped, supplies were not getting through, and the north end of the bridge had been lost. After severe fighting 1 Air Landing Brigade had forced its way back to the main body of defense just west of Arnhem.³¹

The weather was still unfavorable on 21 September with low clouds over England until afternoon. Finally conditions improved so that about half of the Polish Parachute Brigade and the most urgently needed supplies were dispatched via the southern route in 294 aircraft. No glider tows were attempted. Only 219 planes carried out their missions and of these, 28 were lost before they could get back to friendly territory. Between 50 and 100 enemy fighters which lay in wait for the Allied aircraft were materially aided by the bad weather: a Spitfire squadron escorting the troop carriers mistook them for P-51's flying top cover until they attacked the transports. In the ensuing battle 15 British and 4 American aircraft were lost; 20 of the enemy were shot down and 4 were damaged.³²

Only two of the six ADGB Spitfire squadrons assigned to give escort and antilak protection on the first airborne mission of the day succeeded in taking off, and these did not make contact until the troop carriers

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had reached Arnhem. The 56th Fighter Group of the Eighth Air Force, which was detailed to area cover, was late in reaching the drop zones because it ran into 22 single engine fighters, 14 of which were destroyed and 2 damaged. All in all, only 34 P-51's had sortied for this first phase of the troop carrier operations and 3 of these were lost.³³

ADGB fighters supported the second phase of troop carrier operations, eight squadrons being detailed as cover from the Belgian coast to the initial point and seven squadrons as cover and antilak patrol between there and Eindhoven. Five British squadrons were unable to get off the ground on account of the weather, but the other 10 performed their assigned tasks. Only two Eighth Air Force fighter groups, the 353d and 359th, were detailed for area patrol, the latter being recalled on account of the weather. The 353d Group, however, went on to encounter about 30 enemy aircraft, some attacking C-47's and others flying top cover; in the combat 6 enemy aircraft were shot down and 1 P-47 failed to return.³⁴

While the 101st and 82d Airborne Divisions continued to hold the corridor which was bearing the brunt of an attack by German forces from the Reichswald, the Guards Armoured Division and the 43 Infantry Division made a strong attempt to get through to aid 1 Airborne Division. Although heavy rains and fierce enemy opposition deterred them, on the evening of the 21st their artillery was within range of Arnhem. By this time 1 Airborne Division's position was slightly improved because much needed supplies had finally been received from the day's dropping operations. In addition, elements of the Polish Parachute Brigade had been dropped

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on the south bank of the Neder Rijn, but when they landed nearer the village of Elst than had been intended, they suffered heavy casualties from enemy fire within the town. The 1 Parachute Brigade was still cut off and had also been subjected to heavy losses.³⁵

On 22 September further deterioration of the weather made troop carrier operations impossible, but two groups of Eighth Air Force P-47's (the 353d and 56th) got off to patrol the Arnhem area without a loss. Armed reconnaissance was flown by the Second Tactical Air Force in the Arnhem, Breskens, and Utrecht areas northeast of Eindhoven.³⁶ The same afternoon German infantry-tank units cut the corridor between Uden and Grave despite determined efforts by Allied forces. The advance of the Guards Armoured Division was held up at Elst by rain, but 43 Infantry Division succeeded in bypassing enemy resistance and got through to join the Polish Parachute Brigade on the south bank of the Neder Rijn. The support of British artillery was of little assistance to the hard pressed 1 Airborne Division whose position was being attacked from the north, east, and west.³⁷

After four days of unfavorable weather, improved conditions on 23 September resulted in the largest airborne program since the beginning of MARKET on 18 September: altogether 654 aircraft were dispatched, 490 of them towing gliders. Of the 123 British transports detailed to supply 1 Airborne Division, 115 completed their assignments and 6 were lost; the drop, however, was not a success for most of the ammunition and supplies fell to the enemy. Eight of the 41 American aircraft carrying Polish parachutists were lost, but the drop was accomplished. The 82d and 101st Divisions were supplied by 448 gliders of an original 490, 32 of them and

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1 aircraft being lost.³⁸ ADGB furnished cover for the troop carriers between the English coast and the initial point at Eindhoven and patrolled the areas north and south of Eindhoven along the axis of the airborne route. Eighth Air Force furnished 14 fighter groups: 3 P-47 units for flak neutralization patrols in areas between and surrounding the Arnhem and Nijmegen drop and landing zones; 1 P-47 and 4 P-51 groups for high and low cover and general escort in the areas from Bourg-Leopold to Arnhem; and 1 P-38 and 5 P-51 groups for perimeter patrols. Of the 499 Eighth Air Force fighters which flew credit sorties, 14 failed to return and 41 were battle damaged, mostly by flak. The 356th and 78th Groups on flak patrol made dive-bombing, strafing, and rocket attacks but were hindered by changing battle areas and difficulty in recognizing friendly troops, they were also still hampered, as they had been since D-day, by orders not to fire on ground positions until they were fired upon. The 353d Group on area patrol met with more than 50 enemy aircraft southeast of Arnhem and scored 19/1/4 at a loss of 4 of their own planes. The 364th Group was attacked by 35 German fighters at a low level and claimed 2 destroyed and 2 damaged. One P-51 group on perimeter patrol, the 339th, encountered three separate flights of enemy aircraft, each numbering about 35, and after the dogfights 6 German planes were destroyed and 1 probably destroyed for the loss of 3 P-51's. Despite the very effective ground fire, 18 antiaircraft and gun positions were reported destroyed and 17 damaged in the day's operations.³⁹

Units of the Guards Armoured Division had been sent back south to assist in reopening the corridor below Eindhoven and in the afternoon of the 23d they succeeded in doing so. Other British units coming up from

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the rear reinforced the area. That night about 250 members of the Polish Parachute Brigade were ferried across the river in a desperate effort to reinforce 1 Airborne Division.⁴⁰

On the 24th of September no airborne operations could be undertaken from England because of rain and low clouds; only a few Belgium-based planes took off to deliver the most essential supplies. Although at least 50 enemy aircraft operated over the battle area during the day, a few American transports were able to supply the 101st Airborne Division on 25 September, and seven British planes from Belgian bases, one of which was lost to flak, were dispatched to supply 1 Airborne Division. Escort was provided by ADGB on both days; no Eighth Air Force planes operated in connection with MARKET on either day.⁴¹

In the afternoon of the 24th the corridor was again cut by the enemy between Veghel and St. Oedenrode and these positions were held throughout the following day. The 82d Airborne Division, however, continued its progress into the town of Beek. Below the Neder Rijn the corridor was widened and the town of Elst was occupied. Although on the 24th rocket-firing Typhoons had alleviated the position of 1 Airborne Division somewhat, only small elements of 43 Infantry Division were able to cross the river that night and they did not make contact with the forces on the north bank. With troop carrier operations at a standstill, it was decided on the morning of the 25th that the position of 1 Airborne Division was untenable. Accordingly, during the night under protection of forces which had relieved them, about 2,400 troops were evacuated to the south side of the river in assault boats leaving a few detachments on the north bank to cover the operation.⁴²

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Since it had been decided to withdraw the British and Polish troops, it was necessary to transport special units to service and protect the airfield west of Grave on 26 September. The weather over Holland, non-operational in the morning, cleared in the afternoon so that 209 C-47's carrying British troops successfully landed on the Grave airstrip.⁴³ ADGB gave cover from the English coast to the landing strip and back, while the Eighth Air Force flew 258 credit sorties on area and perimeter patrols as well as escort for the lead group of transport aircraft. In engagements with more than 40 enemy planes, which took place approximately 50 miles east of the airborne corridor, the 479th Fighter Group claimed 28/1/8; only 1 P-38 was lost to antiaircraft fire.⁴⁴

The last phase of the airborne operation took place on the night of 26/27 September when the remainder of the British 1 Airborne Division, the covering troops of 43 Infantry Division, and the Polish Parachute Brigade finally made their way across the river. The former was sent to Brussels whence they were flown back to their English bases; the Polish Parachute Brigade continued as a part of the British Second Army. In the south the American 101st Airborne Division, after hard fighting, succeeded in reopening the corridor south of Veghel, and the 82d Airborne had achieved further successes in its drive to the southwest and southeast.⁴⁵

Although some sources state unequivocally that the airborne phase of MARKET was a success, it is difficult to consider the whole operation as such. General Montgomery, who commanded 21 Army Group, said that the air action was 90 per cent effective,⁴⁷ but the fact remains that the crossing of the lower Rhine, the main objective of MARKET, was not completed. The operation was considerably prolonged because weather condi-

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tions prevented planned lifts in the length of time originally specified; weather and heavy opposition, as well as insufficient forces, deterred ground troops from making contact with 1 Airborne Division at Arnhem. Although it was not wholly culpable, this unit was the one which had failed to take and hold its objectives. Theirs was the most forward position and the most hazardous; the elements on the north bank of the river were undermanned, reinforcements were not forthcoming, and most of the supplies dropped to them fell into the hands of the enemy. Air support for 1 Airborne was notably ineffective, largely because of the weather, so that enemy air attacks were heavier and more frequent. The other two units, the 82d and 101st Airborne Divisions, were more fortunate in that the ground forces made contact with them, they succeeded in taking their objectives, and with the aid of the ground units they were able to keep the corridor open. The air drops to these units were in every instance successful. But above all, it is to be remembered that a part of the success of the two American divisions was due to 1 Airborne's stand at Arnhem: against overwhelming odds, it kept off enemy reinforcements from reaching Nijmegen and contributed vitally to the capture of the bridge there.

The prevailing poor weather undoubtedly prevented the German Air Force from putting up a maximum effort, but at the same time it prevented the Allies from bringing to bear the full weight of their air superiority. While the GAF was quick to perceive the main landing areas, its reaction was slow on D-day. This was probably due to the fact that its forces were committed elsewhere, but by 21 September new forces from central Germany were operating over Holland. Allied losses through interception

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were comparatively small, being restricted for the most part to one day, 21 September. Altogether, however, German fighter reaction, day and night, was very close to the 100-150 sorties per day expected over a period of three days. Despite this, the success of the enemy effort was not commensurate with the number of planes participating; this again may have been largely because of the weather, although it was a fact that the GAF was hampered by scarcity of fuel, lack of trained pilots, and inadequate servicing conditions. In view of the status of the Luftwaffe, it is thus somewhat surprising that so many planes--and pilots--were used tactically in Holland, in general a reversal of GAF doctrine, instead of being saved to defend the homeland.⁴⁷

On D-day the Allied fighters engaged in antiaircraft neutralization achieved marked success (a message of commendation was sent by Maj. Gen. Paul L. Williams, commanding IX Troop Carrier Command, on 17 September),⁴⁸ but thereafter results were more limited. Flak neutralization was a hazardous assignment at best, but the prohibition against attacking enemy flak positions unless fired upon caused even greater losses than this tactic usually involved. The justification is twofold: (1) friendly ground troops had to be protected from indiscriminate dive bombing; (2) the slower troop carriers would have been fair game for enemy gunners without fighter antiflak cover. Although there were cases in which Allied fighters were fired upon by friendly troops, it is to those pilots' great credit that they coolly ascertained the identity of the battery (the guns were marked) and did not return fire, instead of diving headlong to avenge their injury. Assignments were frequently changed at the last minute with no time for briefing, which no doubt limited results and

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increased casualties. Weather conditions made dive bombing, which is by far the most accurate type of fighter bombing, difficult if not impossible and magnified the problems of identifying flak positions. The claims against antiaircraft defenses are difficult to substantiate. About all that can be said is that the guns were silenced even though only temporarily; this fact must be taken into consideration when studying the claims.⁴⁹ Fighters in general cover roles afforded valuable protection to transport carriers, and the interception of enemy aircraft before they could penetrate the areas of operation resulted in claims far outnumbering the casualties suffered by Allied fighters.⁵⁰

CARPETBAGGER Operations*

CARPETBAGGER operations had been carried out since the end of 1942 by the RAF, through their Special Operations Executive, the British organization cooperating with the American Office of Strategic Services, which directed the American CARPETBAGGER activities. It was not until early in 1943, however, that American B-24's were requested for these operations, and then the planes had to be modified and the flyers trained by the British. On the night of 4/5 January 1944, the first American CARPETBAGGER mission was flown in the European theater; subsequently the B-24's ferried arms, agents, and supplies to underground forces in Norway, Denmark, Holland, and France.⁵¹

On 13 June 1944 Special Force Headquarters (SFHQ)[†] issued a report

* Supply drops to the European resistance groups. See AAF Reference History No. 21, Special Operations: AAF Aid to European Resistance Movements, 1943-1945.

† A British and American organization in SHAEF which directed CARPETBAGGER operations.

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which indicated that in south central France alone 47,800 men were mobilized, 31,800 of whom needed arms. The B-24 group, with the help of some North African B-17's, already supplying the patriots could arm 10,900 of these men and maintain 13,500. This was woefully inadequate, of course; the situation called for additional CARPETBAGGER aircraft with trained crews so that the potentialities of the French resistance movement could be realized.⁵²

Impressed by these potentialities as shown in the SFHQ report, SHAEF assigned the Eighth Air Force to engage in CARPETBAGGER missions to the Maquis and authorized direct liaison with SFHQ. The latter was responsible for transporting containers of supplies to the Eighth, for arranging communications with the Maquis and identifying signals (bonfires) that would insure drops over well-controlled sectors, and for selecting and pinpointing areas urgently in need of supplies. Operational details and execution of the missions were the responsibility of the 3d Bombardment Division of the Eighth Air Force.⁵³

Five dropping areas were chosen for the first mission on 25 June 1944 (ZEBRA): the Cantal area, the department of Haute-Savoie, the Vercors area, the Jura range, and the mountainous Ain area. The night before, the Eighth Air Force alerted SFHQ, which in turn transmitted the warning message over BBC's French newscast at 1930 hours. Within less than an hour three wireless telegraph operators at the dropping points confirmed the patriots' readiness; confirmation from a fourth arrived in the morning. From the Cantal area, where heavy German attacks were in progress, no word was received and the crews were instructed to drop there only if

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signal fires were burning. At 0400 hours 180 B-17's took off in muggy English weather which turned into perfect visibility over the continent. At their aiming points 176 of the B-17's made successful drops, one was lost to flak near Alencon, and farther south an enemy fighter destroyed another in a sneak pass.⁵⁴

The 3d Bombardment Division thus established definite proof of the practicability of large-scale daylight deliveries, and other successful missions were to follow. On 14 July, the anniversary of Bastille Day, 324 planes were launched in Operation CADILLAC; 322 arrived over their drop zones and were able to release 3,698 out of 3,780 containers. The patriots radioed: "Daylight operation very successful and took place without a hitch." In the fight for St. Lo, which was then going on, French Forces of the Interior (FFI) prevented large numbers of German reinforcements from reaching their front lines, the supplies dropped by the Eighth Air Force accounting in large measure for the FFI's defensive action.

On 1 August, 192 out of 194 planes reached their destinations, which included two previously unvisited zones, in Operation BUICK; only 23 out of 2,281 containers failed to be released. A brief acknowledgment, "Operation O.K.," was received from the patriots.⁵⁵

On 15 August Allied forces landed in southern France and began their drive northward, aided materially the FFI, who had been armed primarily through Eighth Air Force drops. Maquis in the interior were also beginning to resist more strongly. As the Germans began their retreat northward they were harassed en route by the French resistance forces, who cut off rearguards, directed thrusting French and American armor into strategic

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areas, and revealed the strength and position of Nazi units. By 1 September most of south-central and south-western France was under Maquis control.⁵⁶

Meanwhile, several CARPETBAGGER missions were planned only to be scratched because of the acceleration of the Allied timetable, ironically brought about by continued Maquis activity. Finally, 9 September was selected as the most propitious time to assist the Maquis in their mopping-up operations. On that date 70 B-17's dropped 810 containers 25 miles south of Besancon in Operation GRASSY; only 26 containers were not released. The next day, 10 September 1944, the Third and Seventh Armies were officially reported to have formed a juncture west of Dijon; Lt. Gen. Alexander M. Patch's Seventh had bagged 70,000 prisoners in 26 days of fighting.⁵⁷

The 3d Bombardment Division was able to place over the designated dropping areas 98.6 per cent of the aircraft assigned to these four missions, while at the same time mounting its priority bombing operations over France and Germany. Of the 9,114 containers transported, only 166 or 1.8 per cent failed to be released. This record is all the more notable in view of the fact that it was achieved without previous experience in such operations.⁵⁸

The Warsaw Drop

On 1 August 1944, Polish partisans under the command of Lt. Gen. T. Bor-Komorowski seized several key areas in the Sadyba district of German-held Warsaw. The object was to keep control of the old city section until the Russian forces driving west could take Warsaw; the Russians were then only 10 kilometers away from the city in the outskirts of Praga, which

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was held by little more than a single German division. General Bor and his staff were confident that the Soviet forces would begin their attack on Warsaw almost immediately, although it had been impossible to establish communications with them; at least the Polish radio messages were not answered.⁵⁹

On 29 July 1944 a broadcast had been made from Moscow in the Polish language urging the people of German-occupied Poland to rise to arms immediately. According to General Bor, the message was signed by Mr. Molotov, the Soviet Commissar for Foreign Affairs, and E. Osobka-Morawski, a leader in the Moscow-dominated Committee of National Liberation, which considered itself as having true governmental authority over Poland. Whether Molotov's name was signed to the message or not, it must have had the authorization of the Soviet government, or it would not have been put on the Moscow radio. The Russian government, however, has never admitted its responsibility.⁶⁰ At any rate, on the following day London monitored a similar appeal, again by the Moscow radio, calling specifically upon the inhabitants of Warsaw to aid the Red Army in crossing the Vistula River into Warsaw. General Bor learned on 31 July from a British broadcast that Premier Mikolajczyk, head of the Polish government in London, was in Moscow, and he assumed that the conference between Stalin and Mikolajczyk would lead to immediate contact between the Poles and the Red Army. This was not the case, although the Russians did promise Mikolajczyk that aid would be given to the Poles. Actually, the conference was called for the purpose of giving Stalin an opportunity to deliver an ultimatum to the Polish premier: he was told that he would

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have to make a satisfactory arrangement with the Committee of National Liberation or Stalin would recognize that committee as the real governing body of Poland and deal only with them.⁶¹ Meanwhile, General Bor made his move and bitter fighting broke out in Warsaw.

Pressure was soon brought to bear on the British and Americans by the Polish government in London to furnish supplies to the Warsaw underground, and on 13 August negotiations were started for the Eighth Air Force Warsaw supply drop, which was first called FRANTIC VI but was finally executed on 18 September as FRANTIC VII. On 14 August the Russians blandly announced that they knew nothing of the insurrection beforehand and that it was sponsored entirely by the Polish government in exile in London; FRANTIC VI was disapproved. The Russians stated that they did not object to American and British planes dropping supplies to the Poles as long as Soviet bases were not used.⁶² Finally, however, they changed their policy and on 10 September consented to American and British use of Russian bases.⁶³ After this, the Russians offered full cooperation, informing Maj. Gen. Robert L. Walsh, commanding general of USSTAF's Eastern Command at Poltava, that they intended to give fighter support to the operation and attack enemy airdromes in the target area.⁶⁴ These commitments were never carried out. Paradoxically, however, the Russians themselves started dropping supplies to Warsaw and indicated to Maj. Gen. John R. Deane, head of the American Military Mission in Moscow, that they would continue to do so as long as a need existed.⁶⁵ Although the Soviet had previously requested a coordinated Anglo-American-Russian plan for the drop,⁶⁶ they apparently decided that their supply efforts to the Polish patriots eliminated the necessity for a concerted

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plan. To complete the confusing picture, no representatives were sent to Russia by the British or the Americans to draw up a plan; they apparently considered the invitation superfluous when Russia agreed to the Eighth Air Force drop.⁶⁷

FRANTIC VII was thus scheduled for 13 September but was postponed daily on account of the weather; on 15 September the planes (from the 3d Bombardment Division) actually took off but were forced back by weather which claimed two Mustangs, both from the 357th Fighter Group, over the Continent.⁶⁸ Finally, on the morning of 18 September, 110 3d Division B-17's, led by Col. Karl Truesdell, Jr., were dispatched from bases in the United Kingdom. After proceeding on a northeasterly course across the North Sea, the Danish peninsula, and the Baltic Sea, they changed course northeast of Kolberg in Pomerania and flew inland across Poland southeast to Warsaw. Over the three drop zones 107 B-17's dropped approximately 1,284 containers from altitudes of 13,000 to 18,000 feet and then continued on to Russian bases near Poltava.⁶⁹ Only one B-17 was lost (it was seen to explode over the target), while another, first reported lost, landed safely at Brest Litovsk in Poland.⁷⁰ Fighter support was provided by 148 P-51's, the 355th Group (64 P-51's) escorting the bombers on to the Russian bases. This group ran into nine enemy aircraft, destroyed four of them, and damaged four. For the entire mission 10 GAF planes were destroyed and 10 damaged at a loss of 3 P-51's.⁷¹

It is not known definitely how many containers reached the Polish patriots; most reports say that only about 50 per cent were dropped inside the city of Warsaw. Although it is certain that only three drop zones were missed completely, the Russians believed that as many as 50 per cent

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of the supplies fell into German hands because of the Allied failure to drop from more accurate low altitudes.⁷² Nevertheless, the mission was considered generally successful. A representative of the Polish General Staff in London wrote that "the operation created a surge of optimism and had a great moral effect on the fighting forces and on the civilian population. This unanimously reported by all the G.O.'s and the administrative authorities."⁷³

Despite the morale boost, however, the Poles fought the unequal battle for over 40 days with only a few supplies dropped sporadically by Italy-based Allied planes in addition to those dropped by the one Eighth Air Force mission. Contrary to Russian promises of full cooperation, their planes which had been attacking German positions in Warsaw prior to the revolt suddenly stopped and did not fly again until mid-September. A small amount of food and ammunition was dropped then, but when parachutes were not used the weapons were damaged beyond repair. Lack of ammunition and food finally ended the ill-fated uprising on 3 October 1944; the Red Army did not enter the city of Warsaw until the following January.⁷⁴

The VARSITY Drop*

Operation VARSITY was the airborne phase of PLUNDER, the crossing of the lower Rhine by 21 Army Group.⁷⁵ It was carried out by the First Allied Airborne Army on 24 March 1945 and involved transporting the personnel and equipment of the American 17th and British 6 Airborne Divisions to drop and landing zones on the east bank of the river north

* See "Operation VARSITY" in Chapter IX for other Eighth Air Force tactical operations and Chapter VII for operations against airfields specifically.

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of Wesel. Under the provisions of the over-all air plan for VARSITY, the Eighth Air Force's only assignment involving direct air-ground cooperation was the air supply by the 2d Air Division of both ground divisions immediately after the dropping and landing operations. Details for the execution of the mission were formulated by air division headquarters in conjunction with the headquarters of other commands concerned and were coordinated with Headquarters Eighth Air Force.⁷⁷

The first troop carrier drops were scheduled to take place at 1000 hours, and with approximately 1,500 troop carrier aircraft participating, the operation was expected to run 2 hours and 42 minutes. The 2d Air Division B-24's were to drop their supplies 15 minutes after the troop carrier units had landed, half of the planes assigned to the British area and half to the American area. The route to be followed from England to the drop zones was the same as that to be taken by the airborne columns; it provided for an easily identifiable run from the initial point to the target, avoiding Wesel, and necessitated a minimum of time over enemy territory.⁷⁸ It was decided that close escort by Eighth Air Force fighters would not be necessary because of the shallow penetration involved and the large number of Allied fighters that would be operating throughout the area. Four Eighth Air Force fighter groups on armed reconnaissance patrols in areas nearest to Wesel were instructed to be prepared to assist the bombers in case they reported enemy aircraft. Also, P-51 weather scouts were to precede the B-24's to report on route and target conditions.⁷⁹

On 24 March take-offs and assemblies were accomplished without incident by 240 B-24's. Weather conditions were excellent until, 30 miles from the initial point, haze was encountered which restricted visibility

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to one mile in certain areas. As the Rhine was approached, the haze so increased that it was impossible for squadrons to maintain visual contact. Fortunately, however, the drop zones were relatively clear and readily identified.⁸⁰ Between 1310 and 1330 hours, a total of 237 B-24's accurately dropped 598 tons of supplies from about 300 feet with no enemy opposition in sight. Nevertheless, 14 B-24's were lost, 7 to small arms fire and 7 to unknown causes. (It is probable that most of the latter were actually shot down by antiaircraft fire, although at least one of them is believed to have hit an obstruction.) In addition to these losses, one B-24 overshot the runway on return and sustained severe damage.⁸¹

The accuracy of the entire drop was extraordinary. Only three aircraft assigned to the British zone dropped west of the Rhine so that 86 per cent of the supplies fell in the assigned area; another 10 per cent was so close that they were retrieved with little effort. Of the American supplies, 100 per cent fell in the designated area, although two squadrons of the 389th Bombardment Group had to make second runs to achieve this score.⁸²

Food Drops to Dutch Civilians

By the summer of 1944 it had become evident that the food situation for the civilian population in western Holland would be critical with the approach of winter. By early November 1944 the question of supplying food to the Dutch had been discussed at a very high level, but at that stage of the war there were very heavy demands upon available airlift. Primary consideration from the air point of view was properly given to the requirements of battle; if these requirements were heavy,

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almost no civilian airlift would be available. If they were not, however, heavy bombers carrying up to 2,000 tons of food daily might be made available. Accordingly, two plans were prepared: (1) an airdrop of up to 2,000 tons of foodstuff per day for 14 days; (2) a token lift of a few hundred tons daily or whenever aircraft could be made available.⁸³

In January 1945 the Reichscommissar for Holland proposed opening negotiations with the Allies to arrange a temporary truce while supplies were delivered to his country.⁸⁴ As late as March neither plan had been acted upon; it was felt at that time that assistance to the Dutch would conflict with the proposed aid to Allied prisoners of war (POW's) in Germany.⁸⁵ By 15 April, however, the advancing ground forces were over-running POW camps at such a rate that the necessity for airdrops to prisoners was reduced.⁸⁶ Finally, in the latter part of April an agreement was reached when the Germans agreed to several drop zones but laid out three danger areas over which Allied air forces were not to fly under penalty of being fired upon. Ground forces were not to advance from the positions occupied by them at the beginning of the operation.⁸⁷

By the end of the month all of northwestern Holland had been cut off from the rest of the German-held area by the drive of Allied armies across the Maas and up to the Zuider Zee. Furthermore, large sections of the country had been flooded by the Germans so that the food situation in western Holland had become desperate.⁸⁸

Fortunately for the Dutch, the lack of strategic targets for heavy bombers made it possible for the Supreme Allied Commander to sanction the use of both RAF and Eighth Air Force bombers in carrying supplies to Holland. The first mission was flown by RAF Bomber Command on 29 April

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1945, and from then through 8 May RAF bombers flew nine fooddropping missions to the Dutch, 6 May being the only day they did not operate.⁸⁹ In conjunction with these, the Eighth Air Force dropped food to Holland on six days, from 1 through 7 May, the 4th being the only day it did not participate. A total of 2,192 Eighth Air Force B-17's out of 2,213 dispatched dropped 4,147.1 tons of food during this period and suffered the loss of only one B-17, which had to ditch in the North Sea.⁹⁰ Otherwise the missions were uneventful.

Thus, the number of aircraft dispatched by both the RAF and the Eighth Air Force totaled 5,554 planes and 11,669.8 tons of supplies were dropped to enable the Dutch to hold off starvation until the war ended on 8 May 1949, when it was possible to take supplies in by boat. This errand of mercy, performed during the last week before the war ended, was a fitting way to bring to a close the combat operations of the Eighth Air Force in World War II.

Prisoner of War Evacuation

TALISMAN was the first code name given to the post-hostilities operation for the pacification and control of conquered Germany. As early as August 1944 SHAEF was developing a plan for air delivery of food and medical supplies to Allied prisoners of war, which was to be a part of the larger SHAEF post-hostilities plan. It was first thought that on account of other TALISMAN airlift obligations, this job would have to be done under SHAEF by the British and American strategic air forces and that bombers would have to be used rather than the regular

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transport planes.⁹¹ In October the preliminary plans for the participation of the U.S. air forces in the relief of POW's was prepared by USSTAF's Director of Post-Hostilities Planning. The priority given by SHAEF to this project made it second only to the requirements for the defeat of Germany.⁹²

In November 1944, however, the TALISMAN program was superseded by Operation ECLIPSE,⁹³ which was defined as "the military continuation of OVERLORD from the moment of German surrender until control in Germany is taken over from the Supreme Commander by the Tripartite Government."⁹⁴ It was originally believed that there was a strong possibility of no formal surrender, that an arbitrary armistice day would have to be declared by the Supreme Commander, and that the period of the operation would involve sporadic hostilities, extensive mopping-up operations, and a reorganization of the conquered territory under very difficult conditions. It was also assumed that the regular transport agencies would be swamped with other airlift obligations and that the responsibility for the relief of POW's would belong to the bomber force, which by then would be released from their strategic commitments.⁹⁵

In February 1945 the CCS directed General Eisenhower to revise the earlier plans and prepare a new one for the earliest possible evacuation of POW's, using aircraft whenever feasible. This directive made the strategic bomber forces available to the Supreme Commander, and in March a letter from the SHAEF chief of staff made USSTAF responsible for the air supply and evacuation of POW's.⁹⁶

Actually, the airlift tasks carried out during ECLIPSE varied

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considerably from the earlier plans. Soon after the crossing of the Rhine in March 1945 Allied ground troops began to overrun German POW and concentration camps, and it was found expedient to use transport planes returning from supply missions to evacuate the prisoners. Accordingly, the SHAEF ECLIPSE airlift plan of April 1945 gave the general direction of the project to the Combined Air Transport Operations Room (CATOR),⁹⁷ which was an agency for coordinating, controlling, and allotting airlift made available by the Supreme Commander in accordance with established priorities.⁹⁸ The ground armies swept through Germany so fast that the greater part of the supply-dropping program and food relief of POW camps became unnecessary, and the major effort was directed toward the evacuation of the prisoners. In this, IX Troop Carrier Command rather than the bomber forces carried by far the greater burden, moving 70 per cent of the total evacuees.⁹⁹ In the period from 3 April through 31 May 1945 a total of 354,488 persons were flown out of Germany, 299,515 of these in U.S. planes. Of the American total, IX Troop Carrier Command carried 251,145, the Eighth Air Force 42,402, and the 302d Transport Wing 4,968. English transport and bomber planes carried 55,901 repatriates and the French Air Force evacuated 72.¹⁰⁰

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Chapter VI

CROSSBOW

It became known during 1943 that the enemy was preparing an attack on the United Kingdom with flying bombs and rockets.* Much experimental work on these projectiles had been done at Peenemunde in the Baltic Sea area, and it was believed that the Germans would soon be in a position to construct sites from which the projectiles could be launched. In fact, this construction had begun, chiefly in the Pas de Calais and Cherbourg areas, during the autumn of 1943.¹ Considerable research on the nature of these novel weapons was carried out by operational research sections, and it was concluded that they represented a major menace both to the United Kingdom and to the preparation and build-up of forces for the projected Operation NEPTUNE. Consequently, it became necessary to divert part of the available air effort to attacks on construction and launching sites to prevent the threat from becoming a reality. The danger was not underestimated, but the air effort prior to D-day did not wholly succeed in overcoming it.²

The sites were classified as follows: (1) ski sites (so-called because from the air the construction looked very like a ski) designed for launching bombs; (2) rocket sites, of larger construction and designed for the launching of heavy rocket shells; and (3) supply sites, constructed near launching sites to hold a supply of flying bombs.

These sites were given the code name NOBALL and operations against

* Flying bombs, designated V-1, were considerably smaller than the rockets (V-2) as well as having a different propulsion mechanism. Both, however, were comparable in performance.

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them were carried out under the name CROSSBOW. By 5 December 1943, 54 ski sites and 3 rocket sites had been identified on reconnaissance photographs; it appeared that the sites in the Pas de Calais area were aligned toward London and those in the Cherbourg area toward Bristol.³ By the middle of December some 75 ski sites had been plotted by Allied intelligence, and it was estimated that by mid-January 1945 the enemy would be able to launch approximately 300 tons of V weapons daily, 1,000 tons by mid-February. Accordingly, the Eighth Air Force was directed to join all other air forces in the United Kingdom in large-scale attacks against 51 sites which were half, or more than half, completed.⁴

Air operations against NOBALL targets by the Eighth Air Force began in earnest on 5 December 1943, although a few operations had been carried out earlier. On 24 December 1943, for example, 672 of the Eighth's heavy bombers raided 24 sites with excellent results. Attacks were continued sporadically throughout the rest of the winter and most of the spring, and the heavy bombers, operating in the daytime, demonstrated a high degree of efficiency in comparison with other aircraft types sent against V-weapon targets. By the end of April 1944, 96 confirmed ski sites had been attacked one or more times, the total bomb tonnage mounting to approximately 20,500 tons. Of the 96 sites, 73 were severely damaged, and the remaining 23, only 16 of them being near completion, were either under construction or in a state of repair.⁵

As a result of the air bombardment, the enemy abandoned the ski sites and began the construction of smaller and less elaborate installations known as modified sites. The first one had been noticed in April

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and by 24 June, 12 days after the enemy had launched the first flying bomb, approximately 66 modified sites had been found. At this time the Eighth joined the other air forces in assaults on the modified sites, which continued until the capture of the Pas de Calais in early September. Because of their small size, however, these installations did not prove to be suitable targets for heavy bombers. Consequently, numerous counter-measures were tried, notable among which were attacks against the big supply dumps in tunnels discovered at points to the north and east of Paris, and strategic operations against V-1 production at the Fallersleben, Russelsheim, and other factories in Germany.⁶

After the first flying bombs were launched, it was feared that they might soon be supplemented by rocket attacks. Back in the middle of February 1944 a revival of construction had been observed at most of the seven large sites first discovered and hit in 1943, and they had been placed on top priority for CROSSBOW. Although these sites were hit from time to time during the succeeding months by the Eighth Air Force and RAF Bomber Command, it was not until June 1944 that any appreciable damage was inflicted, and then it was largely attributable to attacks by RAF Bomber Command with its Tallboy bombs. By the early part of July after the Normandy landing, all seven sites were temporarily suspended from the priority list because they were no longer of any use to the enemy.⁷

It was realized that the launching of rockets was not wholly dependent upon the completion of large ski sites, since they could be launched, as they eventually were, from small platforms and with mobile equipment. Consequently, other measures were adopted to try and forestall

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any concerted V-weapon attacks. By the middle of August 1944 factories producing the rockets, such as the one at Buchenwald (near Weimar); the hydrogen-peroxide plants at Peenemunde, Holzriegelskreuth, and Ober Raderach; and the liquid oxygen plants in Belgium and eastern France were being bombed by the Eighth Air Force along with regular strategic targets in Germany.⁸

Prior to D-day the Eighth Air Force flew 4,589 sorties against ski sites and dropped 7,968 tons of bombs; 2,045 sorties against rocket sites and dropped 7,624 tons of bombs; and 166 sorties against supply sites and dumps and dropped 479 tons of bombs.⁹

Operations, 16 June to 30 August 1944

The V-1, or flying-bomb, attack on England began during the night of 12/13 June 1944, when 23 of them were launched and 4 made landfall. This attack was either slightly premature or it was used as a trial effort to enable the enemy to perfect range and direction, for continuous bombardment did not begin until the night of 15/16 June, when approximately 122 V-1's were launched and 44 landed in the London area. The city was under almost continuous fire from that date until 3 September, when the launching sites were captured. The maximum number of missiles launched during any 24-hour period was 248, with an average of 100 bombs dispatched per day.¹⁰ The large sites had remained in top priority, followed by ski sites, until the V-1 firing began on the night of 12/13 June 1944, when supply sites and modified sites were placed in first and second positions respectively. No rockets were ever fired from Pas de Calais sites, and no flying bombs were ever confirmed as coming from

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a ski site.¹¹ From 16 June to 30 August, 4,105 Eighth Air Force aircraft hit CROSSBOW targets, dropping 10,677 tons of bombs.¹²

During the last two weeks of June 1944, the number one priority assignment of the Eighth Air Force was to attack the V-1 launching platforms as fast as they were discovered. On 19 June it was known that more than 30 such sites were in operation. Since many of them were small, located in villages or forests, and were well camouflaged, they were difficult to identify, especially from high altitudes, and many of the attacks had to be carried out under unfavorable weather conditions. Moreover, the Germans had devised a semiportable launching ramp which enabled them to set up new operational sites in a relatively short time to replace those destroyed by bombers. Some idea of the importance attached to CROSSBOW and the extent of the Eighth's participation is indicated by the fact that heavy bomber missions were dispatched against these targets on nine different days during the last two weeks of the month. On each mission the number of individual launching sites attacked varied between 3 and 30.¹³

On 16 June the Eighth Air Force made its first raid since D-day on supply sites in the Pas de Calais area; 183 B-24's from the 2d Bombardment Division were dispatched, of which 173 dropped 477 tons of bombs through 10/10 cloud cover. Three of the assigned targets--Domleger, Sautrecourt, and Renescure--were bombed with the aid of Pathfinder equipment, and results were unobserved; Beauvoir was attacked visually but the bomb pattern was not seen there either. Two days later, escorted by the 78th Fighter Group, 67 B-24's of the 2d Bombardment Division were dispatched

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against Watten, a fuel-producing plant for rockets in the Pas de Calais area. Although 10/10 overcast prevailed, 58 B-24's dropped 220 tons of GP bombs through the use of GEE-H equipment; results were unobserved.¹⁴

On 19 June, 423 aircraft were dispatched to bomb 18 NCBALL targets and an electric power switching station in the Pas de Calais area. One combat wing failed to bomb its six assigned targets visually because of 10/10 cloud coverage, and because of poor visibility only seven of the targets were hit by 240 aircraft, which released 540 tons of GP bombs on Pathfinder markers with unobserved results. In a later operation 280 aircraft took off to bomb 17 sites, 15 left over from the earlier operations. Two of them were bombed visually through 2/10 cloud and 14 were attacked on Pathfinder markers through 8/10 cloud by 270 aircraft which dropped 567 tons of GP and 15 tons of SAP (semi-armor-piercing) bombs. Some targets were hit twice; results were unobserved on nine targets, fair on two, and poor on two.¹⁵

Ten NCBALL targets in the Pas de Calais area were attacked by 126 2d Division B-24's with 312 tons of GP bombs on 20 June. The 78th Fighter Group dispatched to support the bombers met more than 20 Me-109's in the Compiègne-Montdidier-Amiens area and claimed 3 destroyed; 1 P-47 was lost to unknown causes. In the second CROSSBOW operation of the day, 417 bombers of the 2d and 3d Bombardment Divisions, supported by the 56th, 356th, and 339th Fighter Groups on area patrol, were dispatched against 21 V-weapon installations. Although 10 of the primaries were not bombed because of 10/10 cloud, 196 B-24's and 33 B-17's dropped 575.4 tons of HE on 11 primaries and 10 targets of opportunity. All

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results were unobserved and there was no enemy air opposition.¹⁶

On 21 June, with 4/10 to 10/10 cloud over the target, 70 B-24's of the 2d Division attacked 3 NOBALL targets in the Pas de Calais area through the use of GEF-H, dropping 200 tons of bombs with unobserved results. The next day, 12 sites in the same area were hit, 4 of them by 85 B-17's (229 tons of bombs) and 8 by 132 B-24's (365 tons); the results ranged from poor to excellent. Thirteen more sites were hit on the 23d, again in the Pas de Calais area, by 212 out of 240 bombers. As usual in these operations, GEE-H was used to release 542.7 tons of GP bombs. The bombers were supported by 165 fighters, but no enemy aircraft were sighted.¹⁷

On 24 June, when the NOBALL targets could not be reached because of poor visibility, 146 bombers supported by the 56th Fighter Group were turned back with the exception of 11 B-17's of the 100th Group which dropped 27.5 tons of 250-pound GP bombs on oil storage tanks in Rouen with poor to fair results. In the late afternoon 229 bombers took off against 12 V-weapon sites and 6 electric power stations in the Pas de Calais; of these, 162 dropped 400.5 tons of GP bombs visually on 7 V-weapon sites, 4 power installations, and 2 or 3 targets of opportunity. No bombers or fighters were in operation on 26 June because of bad weather, but on 27 June 251 aircraft, supported by the 359th, 339th, 352d, 355th, and 357th Fighter Groups, were dispatched to attack supply sites in the Pas de Calais and Creil-Chantilly areas. Over the targets 3/10 to 9/10 cloud coverage prevailed, causing the 487th Bombardment Group and elements of the 486th to turn back and others to bomb targets

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of opportunity, so that only 195 bombers actually struck the primaries with 509 tons of 500-pound GP bombs. Results were poor to fair for the most part, in two cases unobserved.¹⁸

In July the Germans carried on their V-weapon campaign on an extensive scale. The damage done by these attacks was far greater than was admitted at the time by the British Government and military censors. They constituted a real threat to industrial production, the morale of the civilian population, and the English transport system centered as it was in London. Although strenuous efforts were being made by British civil and military authorities to defeat the new German weapon, and despite the fact that considerable progress had been made by the end of July, it was still necessary that the Eighth Air Force continue CROSSBOW.¹⁹

By this time VIII Fighter Command had refined the technique of dropping auxiliary fuel tanks on targets, and 2-pound incendiary bombs were attached to the tanks to ensure ignition of the fuel as soon as it splashed on the target. The fighters were dispatched on a number of strikes against flying-bomb sites in the Pas de Calais area and in the Low Countries, and though some of them were successful, the heavy AA defending the sites made these missions very dangerous. Finally, the commanding general of VIII Fighter Command decided that the results were not worth the cost, and from then on fighter attacks against these installations were made only with HE bombs and cannon.²⁰

Although it was later believed that experiments with the V-1 as an air-launched weapon were begun at Peenemunde and Griefswalder Oie in

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April 1943, it was not until July 1944 that the Allies became aware, largely through PW interrogations, of the fact that He-111's were launching flying bombs in conjunction with the ground sites. Since the major source of intelligence on V-1 attacks had been radar, it is understandable that intelligence had no way to differentiate between types of launching. Air-launching as originally begun over the Belgian coast was accurate, but the efficiency decreased as methods and countermeasures became better known. The main airfields believed to be bases for aircraft launching the V-1 were Venlo, Varrelbusch, Handorf, Arnhem, Gilze/Rijen, Brussels/Melsbroek, Deelen, Soesterberg, Roye/Amy, and Eindhoven. Most of these fields were hit on numerous occasions by Eighth Air Force planes from June to September 1944.^{*21}

Railroads and unloading points were constantly patrolled from the air in search of flying bombs being sent to forward or rear supply depots.²² The depots were originally constructed in conjunction with the ski sites, but realizing that this system was too vulnerable to air attack, the Germans stocked field ammunition dumps with flying bombs and located other depots in underground caves and abandoned tunnels as they had the rocket supply sites.²³

As the Allied attacks on storage sites developed, it was found that a direct relationship existed between the scale of these attacks and the enemy effort. For example, Allied estimates indicated that a 1,000-ton raid would reduce by 250 the total number of flying bombs which otherwise would have been launched in the 14 days immediately following the attack; the maximum decrease would be on the sixth day when only 40

* See Chapter VII for details on airfield attacks.

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instead of the normal 100 could be expected to be sent up. By the end of this two-week period, however, the average of 100 per day could again be attained. In order to prevent such a recovery, much of the bombing effort during the six weeks through July to the middle of August 1944 was directed against supply and storage depots.²⁴

When Luftwaffe fuel dumps were found to be employed as dumps for both V-1 and V-2 fuel, although these dumps were already part of a general target system, from June to September 1944 they became one of the more important targets for Eighth Air Force planes. Approximately 25 attacks were made on them by the Eighth in August, with fair to excellent results.³²

On 1, 2, and 5 July NOBALL targets were hit by Eighth Air Force bombers, only 1 on the 1st by the 486th Bombardment Group (with poor results) but 13 on the 2d by all three divisions (with unobserved results) and 3 on the 5th by the 2d Division (with poor to very good results). Gee-H equipment was used on the first two days because of bad weather. Bombing was done visually in the first operation on 6 July on all except 1 of the 17 assigned targets, and direct hits were made on buildings by some of the 689 aircraft which released 1,785.5 tons of bombs. In the second operation of the day five sites were bombed by 221 aircraft (654.5 tons of GP bombs), Blanc Pignon being hit for the second time that day. There was no enemy aircraft opposition to either operation.²⁶

On 8 July in the first of two CROSSBOW operations 183 aircraft attacked NOBALL targets, railroad junctions, and bridges with poor to good results. In the second operation 268 aircraft attacked visually, dropping 685.1 tons of GP and smoke bombs on 6 V-weapon sites with results ranging

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from poor to very good; there were 7 hits in the target area at Bois de Grand Marche, and the pattern at La Loge was very good. After four V-weapon installations were hit with poor results on the 9th, a period of bad weather set in. On the 14th one F-38 from the 55th Fighter Group dropped two belly tanks and one incendiary bomb on the Foret de Boulogne; results were unobserved. On the 17th, supply and launching sites were hit by the 2d Bombardment Division and GP bursts on and near the tunnel entrance effected good results at the Rilly-la-Montagne dump. On the second operation of 17 July, 140 aircraft visually dropped 388.7 tons of GP bombs on 13 sites with results good at La Loge but only fair on the other targets. There was no further activity of this kind until 25 July when the 56th and 356th Fighter Groups hit a fuel dump at Fournival/Bois de Mont and other targets with 15 tons of GP and incendiary bombs; on the following day they hit Fournival/Bois de Mont again, with poor results, while at Givet 87 P-47's of the 78th and 353d Groups unloaded 14.7 tons of GP bombs and 58 incendiaries. No other NOBALL targets were hit during the remainder of the month by Eighth Air Force planes.²⁷

In August the bombers carried out CROSSBOW missions every day from the 1st through the 6th, in addition to hitting oil and supply dumps. On 7 August oil dumps were struck and the next day, 10 V-weapon sites and 4 airfields were bombed by 359 heavies dropping 924.7 tons of HE. Results were very good on three NOBALL sites, good on two, fair on two, and poor on the remaining three. On 9, 10, 11, and 18 August fuel dumps were hit, but bad weather prevailed from the 19th through the 24th. After a fuel dump in Germany was hit on the 26th, another period of bad

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weather kept the bombers on the ground until 30 August when eight NOBALL targets were bombed by 208 aircraft using either GEE-H or Pathfinder equipment; 556.5 tons of GP and 2 tons of incendiary bombs were dropped with results unobserved. There was no more bombing activity against NOBALL targets during August, and the Allied capture of the Pas de Calais in which they were located precluded any CROSSBOW activity after 3 September 1944.²⁸

The exact priority of CROSSBOW in relation to other targets of the Eighth is difficult to define on the basis of the written directives. Generally speaking, however, the policy of the Commanding General, USSTAF and the Commanding General, Eighth Air Force was to carry out as full scale an attack as was requested of the heavy bombers from time to time, but to prevent so far as possible a diversion from the main strategic mission. This was accomplished by launching very heavy CROSSBOW attacks whenever the weather was favorable for these operations and unfavorable over the German strategic target system.²⁹ In a letter to General Spaatz General Doolittle stated, "Weather conditions are such that we often have opportunities for visual bombing in the CROSSBOW area when there is no favorable bombing weather elsewhere. As a result of this we feel that we can, without undue interference with the accomplishment of our primary objective, accept the major part of the CROSSBOW obligations."³⁰

The CROSSBOW campaign required considerable Allied effort. Although in some months it claimed more than 25 per cent of the Allied air strength, this does not justify the conclusion that if the V-weapon threat had not existed the full effort expended against it would, or could, have been exerted against other target systems. Most of the NOBALL

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targets were not in Germany and could therefore often be attacked under visual conditions when German targets were cloud-obscured. In addition, the short distance from English bases permitted much greater flexibility in timing of operations than was possible against German targets; for example, NCBALL targets could be attacked late in the day and on several occasions with double sorties. Whereas these targets were always within range of medium bombers based in England, German targets were not, until late in the war when the mediums were based on the Continent. The targets were also within range for ground-controlled instrument bombing, an impossibility at the time in Germany, and short penetration required only a minimum fighter escort as well as permitting maximum bomb tonnage to be carried. Thus, although the total weight of the Combined Bomber Offensive would undoubtedly have been augmented, the additional effort, minus the increased aborts and attrition, would have been far from the overwhelming numbers necessary to shorten the war appreciably. During the whole CROSSBCW period (24 December 1943 through 30 August 1944) the Eighth Air Force dispatched 16,272 bombers on 69 days to attack NCBALL targets, 12 per cent of the total Eighth Air Force bomber effort for the period. There were only seven days out of this entire time when opportunities for visual attacks on German targets were lost because of CROSSBCW demands, and none of these occurred before 30 May 1944. On only two days were more than 108 aircraft diverted, and on each of the above-mentioned seven days German strategic targets were hit by the other Eighth Air Force planes. During these seven days, then, only 11.5 per cent (1,869 aircraft) of the over-all effort dispatched

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on CROSSBOW missions could have been utilized for visual attacks against targets in Germany. There were, however, 15 days during this same period when opportunities for radar missions to Germany were lost because of diversions to CROSSBOW; that is, 26.2 per cent (4,256 aircraft) of the over-all CROSSBOW effort could have been utilized for blind-bombing attacks against targets in Germany. Thus, of the 6,100-odd sorties (37.7 per cent of CROSSBOW operations) which could have been dispatched against Germany had the V-weapon menace not appeared, only some 2,000 of them would have been visual.³¹

While V-weapon attacks continued as long as the Germans remained in possession of launching areas, and despite the fact that only the capture of these areas by Allied ground forces ultimately stopped them, it is evident that the scale of V-weapon operations was kept to a minimum by constant air action. The V-1 and V-2 were never able to bring about direct military results and served only to absorb air effort which might have contributed more directly to a speedier Allied victory.³²

* See Appendix 1, "Total Eighth Air Force Effort Related to CROSSBOW Attacks."

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Chapter VII

OPERATIONS AGAINST GAF AIRFIELDS

After overrunning western Europe, the Germans undertook to develop and extend the airfields they confiscated in Belgium and France for use in raids on Great Britain and Allied shipping. These airdromes were the first to feel the force of the Allied counter-air program and the first to be lost.¹ From 1 January to 19 May 1944, attacks on enemy airfields, both in France and in Germany, were part of the general counter-air program and were directed primarily against hangars, workshops, and on the larger fields, living quarters.² Air depots and parks also received a considerable weight of the attack, and in Germany, particularly, raids were directed against bases which were believed to be final equipment and testing depots. And a large effort was carried out against bases used by GAF long-range bombers in the "Little Blitz" against London staged in February-March 1944.³

In addition to the bombing attacks, fighters on escort, sweeps, and patrols often strafed enemy bases to destroy grounded aircraft, and at night intruder aircraft harassed enemy operations at their bases. Finally, it should be remembered that forward bases were subjected to the psychological effect of a constant stream of Allied aircraft passing over on their way to and from other targets.⁴

Operations before D-day

The Eighth Air Force claimed a heavy toll of GAF planes in the five months preceding D-day. In February, for example, which witnessed

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the "Big Week" climax of counter-air operations, the Eighth's heavy bombers claimed 647 enemy aircraft destroyed on the ground in addition to large numbers in the air. The figures for aircraft destroyed on the ground by fighters was negligible in February, but in April the far-ranging VIII Fighter Command claimed 493 enemy planes destroyed on the ground, 6 probably destroyed, and 455 damaged. Even before D-day, then, the Eighth Air Force had already gone a long way toward breaking the back of the GAF.*

The attacks on enemy airfields in Germany itself during this period succeeded only in harassing the enemy and occasionally keeping some of his fighters grounded. Bulldozers and work gangs could have a serviceable strip ready for operation from 12 to 24 hours after the landing area had been thoroughly cratered. Airfields in Germany were restored more completely than those in the western occupied countries, where dispersal area development had a priority on labor and only minimum repairs were made immediately. Although repairs to landing areas and runways became slower as attacks on GAF airfields increased, the more important installations were still being restored rapidly.⁵

In northern France the increasing scale of attacks on bomber and fighter airfields seriously reduced the enemy's program to strengthen all air installations behind the coastal areas where he awaited the invasion. In addition, the over-all efficiency of his aircraft repair and servicing organization was considerably decreased. When Luftwaffe units were forced to operate from second-rate bases because the main

* See Appendix 3 for a statistical summary of Eighth Air Force claims.

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bases were under frequent attack, the operational efficiency of German fighter units against the Allied heavy bomber forces suffered accordingly. Single and twin-engine fighters under favorable conditions would occasionally attempt the interception of straggling Allied aircraft, but mainly they took off from their fields to avoid destruction on the ground.⁶

The Airfield Plan, which was designed as a prelude to the NEPTUNE landing, was put into effect on 11 May 1944. Two areas were selected for attack. Area I consisted of 40 main operational airfields within a radius of 150 miles of Caen; 12 of these were assigned to RAF Bomber Command and the remaining 28 to AEA and the Eighth Air Force. Area II was composed of 59 important bomber bases located in France outside of Area I, and in Belgium, Holland, and western Germany; these were to be attacked, as opportunity permitted, by both the Eighth and Fifteenth Air Forces. From 11 May to 6 June, 34 airfields in Area I were attacked by 3,915 Allied aircraft and 6,717 tons of bombs, with the result that 4 of the fields were completely destroyed and 15 severely damaged but warranting further attacks. In 17 attacks on Area I the Eighth Air Force flew 934 sorties, dropping 2,638 tons of bombs, and during the same period 12 airfields in Area II were attacked by the Eighth with very satisfactory results.⁷

Two of the attacks made by the Eighth in Area I were particularly outstanding, one on Villacoublay and the other on Orly airfield, both by the 1st Bombardment Division on 20 May 1944. Villacoublay airfield had been taken over by Junkers and was used for assembly and repair work; one factory, engaged in the assembly of Fiesler aircraft, was reported

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to have repaired FW-190's. It was the home base of the Reconnaissance Staffel, as well as a fighter training pool. Villacoublay was struck by 192 tons of bombs from 73 B-17's accompanied by a full fighter escort. With the 351st and 381st Bombardment Groups putting an average of over 34 per cent of their bombs within 500 feet of their aiming points, bomb bursts blanketed the technical depot, hangars (five were destroyed and four damaged), and barracks area, while others were observed on the aircraft works, landing grounds, factory buildings, and hangars. On the same day 90 Fortresses with full fighter escort hit Orly airfield, which was a German training center, a bomber and fighter base, and an ammunition stockpile. The 303d, 384th, and 306th Bombardment Groups were particularly accurate, and five hangars were completely destroyed and two others severely damaged by the 249 tons of bombs dropped. Two concentrations of bursts covered the two airship sheds; workshops, office buildings, and barracks were hit with one concentration; and a large repair hanger was left burning.⁸

As D-day approached, the intensity of Allied air efforts against GAF airfields in northern France and Belgium increased; there were many repeat attacks on the same airfields, some being hit as many as three, four, and even five times. This constant hammering of the forward fields seriously hampered the enemy's efforts to put up any serious air opposition to the Allied landings on D-day or during the establishment of the beachheads. Long-range enemy bombers had to operate from bases as far away as Bordeaux, because when their forward bases had been bombed and rendered unserviceable, they were forced into an inefficient program of dispersal. At best they were so far away from the battle area that

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they had to stage through advanced landing grounds to reach their targets. There were occasions in which units were chased from one field to another, suffering losses at each. Ultimately most of the German close-support aircraft were withdrawn as far as 150 miles from the front. At this distance, chances of reaching the battle area through the Allied fighter screen were materially reduced, and even if the battle area were reached, fuel consumption limited the time of action; many enemy aircraft ran out of fuel before reaching their bases and were forced down at scattered points along the route. These operational difficulties, combined with heavy combat losses, were responsible for the Luftwaffe's weak response to the Allied landings, even though aircraft reinforcements had been moved to the western front. Forward air bases had become useless; intermediate bases were operational but in danger of attack; and only at those in Germany itself was there a chance for recovery and refitting.⁹

Operations D-day to 15 September 1944*

From D-day on, heavy and continuous attacks were made on all active airfields within enemy fighter range of the front lines. As was anticipated, the Germans had promptly moved a large proportion of their fighter and ground-attack units to France, particularly to the Paris, Tours, Lille, Laon, and Rennes area, and the Allies subjected these to almost simultaneous attack.¹⁰

The effectiveness of bombing groups of fields simultaneously was demonstrated in the Loire area in the summer of 1944 when virtually all of its airfields, plus those on the Brittany peninsula, were unserviceable. Luftwaffe units based there had to be moved back as far as 200

* See Appendix 2 for a statistical summary of airfield attacks.

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miles to the east of Paris. This kind of concerted attack within a relatively small area posed difficult problems in labor and equipment for the Germans. Repairs could be started immediately on no more than three or four fields at a time, and soon it became a question of whether or not it would be worth while to start repairs with the Allied forces moving forward so rapidly. In either case, the problem finally became not "Shall we move back" but "To which field shall we move to escape the Allied bombers?"¹¹

By June 1944 GAF activities seemed to have been reduced to a point where they could be successfully handled by the fighter escorts of bomber formations. In addition, fighters and fighter-bombers on armed reconnaissance, close support, dive-bombing, and strafing missions, and intruders and fighters on patrol contributed mightily to making fields untenable in France, Holland, Belgium, and Germany.¹² Between D-day and 28 June, some 65 airfields were attacked by 6,286 Allied aircraft and 14,816 tons of bombs. As a result, 21 fields were rendered unserviceable, more than half of the 65 were severely damaged, and a substantial number of aircraft were destroyed on the ground. The Eighth Air Force alone made 135 attacks (5,593 heavy bomber sorties and 209 fighter-bomber sorties) and dropped 13,261 tons of bombs.¹³

On 25 June 638 heavy bombers were dispatched to bomb 4 airfields in the Toulouse area and central France, 21 power and transformer stations in northwestern and west-central France, and an oil dump at Montbartier. At Toulouse/Franccazal the 379th, 303d, 351st, and 381st Bombardment Groups dropped six concentrations of GP bombs and three of incendiaries

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on the airfield and adjacent fields; direct hits were made on four large hangars; two direct hits were made on workshops and buildings; and numerous hits were made on other hangars, aircraft shelters, an ammunition bunker, and parked aircraft. At Toulouse/Blagnac, where the 91st and 398th Groups operated, about 500 bombs fell within the target area, hits being scored on the aircraft repair plant, the sheet metal shop, components repair shop, hangars, and two aircraft on the field. Avord airfield received hits from the 493d, 34th, and 490th Groups on the field and on the northwest dispersal area, while other bombs landed on barracks, workshops, and administration buildings. Bourges airfield was well covered by the 487th and 486th Groups on the northern half, the nearby factory was hit by 100-pound GP bombs, and parked aircraft and the northwest dispersal area also were hit. Two days later, 400 Eighth Air Force fighters were dispatched to bomb transportation targets and four airfields near Paris; two of the primaries were not attacked, but Comnantré and Villeneuve/Zertes airfields were successfully attacked by the 56th and 78th Groups respectively, as was Coulommiers airfield, a target of opportunity, by the 356th Fighter Group. ¹⁴

The enemy's own demolition of coastal airfields in Brittany and the damage resulting from Allied air attacks left the GAF seriously short of advanced bases in northwestern France. Because of labor shortages and Allied delayed-action bombs, airfields were frequently unserviceable for four or five days, and later were only available for limited service; some airfields in the Brittany peninsula were so badly bombed that they had to be abandoned altogether. Airfields in the Paris area thus became increasingly important as bases for harried GAF units, and by 24 June

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they rated top priority. Elsewhere there was a further slowing up of repairs to damaged fields; the average time to restore a field to serviceability had now increased to eight days, and after a field had been attacked twice in succession the enemy showed reluctance to start repairs. On one day during this period 20 major enemy airfields were totally unserviceable and 16 others were usable only under emergency conditions.¹⁵

A short respite from attacks in the week ending 1 July allowed the Germans time to partially restore the serviceability of the fields in Brittany. Fighters based west of Paris were using satellite fields rather than the main bases, and by 8 July the total number of new satellite landing grounds discovered since May had reached 88. Where main bases escaped attack (there were not very many), the enemy hesitated to use the satellites, and when heavy installations at the main bases survived attack, the facilities were still used by units even though the actual landing areas were unserviceable.¹⁶

On 5 July, 300 heavy bombers attacked three airfields in Holland, one in Belgium, and three NOBALL installations in northern France. Although results of the 379th Group's GEE-H bombing of Volkel and the 303d's at Gilze/Rijen in Holland were unobserved, they were thought to be generally good. The 466th, 467th, and 458th Groups achieved a good pattern of bombs on Le Culot airfield in Belgium, postholing the landing area, but the results of the 487th's attack at Eindhoven airfield in Holland were poor. Two other airfields were struck as targets of opportunity with results unobserved at Tirlemont and poor at Melsbroek. Fighter escort

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was provided by 192 P-51's of VIII Fighter Command, and when only two small groups of German fighters were seen near Rouen, some of the Mustangs attacked targets on the ground. Two P-51's of the 361st Fighter Group were lost as against five enemy aircraft destroyed and two damaged.¹⁷

On 8 July the heavy bombers hit several airfields as targets of opportunity. At Poix airfield the bombing results of 92d, 305th, 457th, and 384th Group elements were fair to good, and at Abbeville (351st Group), Conches (94th and 385th Groups), and St. Andre-de l'Eure (447th Group) fair. Two groups of P-47's were also dispatched to dive-bomb the latter field, but one, the 356th, found the target cloud-obscured and bombed Cormeilles-en Vexin airfield instead with poor to fair results. Two squadrons of the 56th Fighter Group did bomb the primary, but with the exceptions of an incendiary which hit the building area southwest of the airfield, the results were unobserved. One incendiary tank was dropped by the 56th on Evreux airfield, and freight cars near Brombos field were strafed by the 356th Group. No enemy aircraft were encountered in the air, and all of the fighter-bombers returned safely.¹⁸

On 19 July, 378 B-17's were dispatched to bomb two factories and an airfield in southwestern Germany. The Luftwaffe sent up 10 to 15 fighters to intercept but they did not attack until after the bombs had been dropped; the American gunners claimed 6/4/4 in the ensuing fight, while 4 B-17's were shot down. At Lechfeld airfield with the 381st, 91st, and 398th Groups bombing visually, the whole area was well covered, and the hangars, workshops, and barracks received a number of direct hits; of the 46 aircraft visible on the field, at least 8 were seriously damaged. A second bomber force hit two airfields. An excellent pattern of bombs fell on

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Leipheim with hits being scored by the 445th, 453d, and 389th Groups on the assembly hangar, other buildings, the airfield area, and possibly on parked aircraft. When only a few enemy aircraft were observed and they avoided contact, the 356th and 339th Fighter Groups in escort strafed Heildrenn and Namur airfields, claiming 16 aircraft and 2 gliders destroyed and 5 planes damaged.¹⁹

There were 169 P-51's dispatched to strafe Lechfeld and Leipheim airfields on 24 July 1944. The former was riddled by the 355th Fighter Group which claimed 12 enemy aircraft destroyed and 7 damaged, all but 1 being twin-engine aircraft. One squadron, the 357th, strafed Landsberg airfield, claiming three damaged single-engine enemy aircraft. Because of a heavy overcast Leipheim was not strafed, and a grass landing field was hit by the 359th Fighter Group instead, where one Me-109 and one He-111 were claimed damaged. A week later, 705 B-17's were dispatched to bomb industrial targets and an airfield in the Munich area, and although results of the 92d and 305th Groups' bombing were poor on the airfield, supporting fighters of the 339th and 353d Groups strafed grass landing fields and Weustedt airfield, claiming 1 enemy plane probably destroyed in the air and 18 destroyed, 12 damaged on the ground. Another force of 104 B-24's was dispatched to attack Creil and Laon/Athies airfields, with Poix listed as a target of opportunity. Results were fair at Creil, where hits by the 490th and 493d Bombardment Groups were seen on the runway and landing fields, but the general bomb pattern fell east of the field; the bombing by the 34th Group at Poix and Laon/Athies was unobserved.²⁰

By the end of July, main airfields used by the GAF in the Paris area and to the east and south had been attacked, with particular emphasis on

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the German sea-mining and ground-attack units. The constant harassing of some 70 airfields not only caused the Luftwaffe to lose large numbers of their operational aircraft, but by forcing their units to move every few days diminished the daily availability rate of their large fighter and bomber force in France to only 15 per cent by the end of the month.²¹

During the month of August while the Battle of France progressed, the Eighth Air Force more and more returned to its original purpose-- strategic bombing of Germany's vital war industries. During this month only about half as many tons of bombs were dropped on tactical as on strategic targets. Nevertheless, 26 airfields and air depots in France were attacks, and 2,245 Eighth Air Force bombers dropped a total of 5,639.8 tons of bombs on them.²² More use was made of the fighter forces for bombing and strafing ground targets than had previously been the case. A brief study of Eighth Air Force claims against enemy aircraft in 1944 shows this very clearly.* In May of that year the heavy bombers claimed 407/123/208 in the air and 265 destroyed on the ground; in September the claims dropped to 90/41/40 in the air and 32 destroyed on the ground. Fighter claims for the same months do not show so striking a decline. In May VIII Fighter Command claimed 494/31/111 in the air and 168/0/141 on the ground; in September claims were 469/15/92 in the air and 392/0/266 on the ground.²³ By 7 August 1944 the GAF had been forced to abandon completely all airfields in the coastal area west of Bordeaux, and by 12 August they had moved to a line of fields east of Paris. Although the development of satellites continued, their quality was deteriorating. Within another month, as the ground forces raced towards Paris,

* See Appendix 3.

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the enemy was forced to destroy the airfields in that area and establish Nancy, Metz, Reims, and Brussels as alternate repair and supply centers. The location of newly discovered landing grounds at this time indicated that the enemy intended to withdraw northward toward Belgium, rather than eastward to his homeland. In the rapidly fluctuating air base situation, the GAF night fighters were among the first to experience the ultimate defeat. Always hampered by the continuous airfield attacks, after the devastating raids of 14 and 15 August, most of them began moving back into Germany; by the end of the month all of the night fighters in France and Belgium had been shuttled to the Reich to clear their bases for close-support aircraft falling back in the face of the Allied advance.²⁴

On the first day of August 416 B-17's were dispatched to attack four airfields and one railroad bridge south of Paris. At Chateaudun the administration area was well covered by the 457th, 351st, 305th, and elements of the 92d Groups, about 20 buildings being destroyed or seriously damaged, and landing fields and runways rendered almost useless. At Orleans/Bricy the 92d, 303d, and 379th Groups damaged the runway and landing ground sufficiently to prevent aircraft from using the field, and at Chartres the north and west hangar areas were well covered by the 91st Group and rail lines, small buildings, and runways were hit. At Melun the runways were severely pocked and the central area heavily damaged by the 398th and 381st Groups; results at Etampes/Mondesir airfield, a target of opportunity, were unobserved. On the same day Melun, Orleans/Bricy, and Chartres were all hit again as targets of opportunity for another bomber force. Results were good at Melun, poor at Orleans/Bricy, and fair at Chartres. Villaroche airfield was also hit by this force,

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with unobserved results, and at Coulommiers there were hits on four buildings in the dispersal area and on an adjoining field. A third force, of 100 B-17's, was dispatched to attack Tours airfield, and 76 aircraft from the 486th, 390th, and 487th Groups dropped 169.5 tons visually on the target. The landing area was hit by at least 18 bursts, there were a number of near misses on hangars, 22 bursts fell on the runway, and others hit the landing ground. The 353d Fighter Group in area support on 1 August hit Leon/Couvron-et-Aumencourt and destroyed three planes on the ground.²⁵

On 8 August, 414 B-24's were dispatched against 4 airfields and 12 NOBALL sites in northeast France. At Clastres the runways, landing ground, dispersal area, and hangars were hit by the 93d, 467th, 460th, and 458th Groups with very good results, while at Comilly hits were made by the 489th and 491st on the dispersal area, landing ground, hangars, and taxiways; Perthes' landing ground, taxiways, large hangars, and other buildings were blanketed by the 392d and 44th Groups' bombs. Leon/Athies was hit with good results as was Bretigny, a target of opportunity. On the same day Zilistea and Buzau airfields in Rumania were bombed by 73 B-17's of the 95th and 390th Groups with reportedly good results; the planes later landed at bases in Italy.²⁶

On 11 and 12 August hangars, buildings, runways, and landing grounds were severely damaged in heavy bomber raids on Villacoublay, Toussus-le Noble, Leon/Couvron-et-Aumencourt, Juvin-court, Leon/Athies, and Mourmelon. Chaumont, Euc, and Perthes airfields were also hit, with results ranging from fair to good. On the second of these days, the 95th and 390th Bombardment Groups, which had landed in Italy after raiding Zilistea and Buzau, saturated the hangar and landing areas at Toulouse/Francazal and

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then flew on to land at their home bases in the U.K. On 14 and 15 August airfields in eastern France, Germany, Holland, and Belgium were bombed. After no enemy opposition on the first of these days, except for a brief skirmish with two jets near Memmingen, the fighter escort on the 15th continued their "stalking" tactics to prevent enemy aircraft from taking off. In the course of this action, the 364th, 361st, and 479th Fighter Groups fought off the attacks of approximately 70 enemy aircraft, claiming 14 destroyed; 6 American fighters were lost. The bombers were nevertheless attacked near Trier and Koppel, where four B-24's and nine enemy fighters went down.²⁷

Roye/Amy airfield was struck by 33 B-24's of the 3d Bombardment Division on 18 August, nearly all the bombs falling in the target area and postholing the field. At Eindhoven, a target of opportunity hit by another bomber force, the damage was slight, the area having been heavily damaged by an earlier raid. On the same day 256 B-24's escorted by the 361st and 479th Fighter Groups were dispatched to attack two fields, two fuel storage dumps, and one aero-engine component plant south of Saarbrücken. At Metz bursts were seen on the hangars, railroad siding, landing ground, taxiways, miscellaneous buildings, and the main roadway; at Nancy/Essey airplanes, hangars, taxiways, landing ground, and buildings received hits. Two oil dumps and one airfield southeast of Paris were the targets for 195 B-17's from the 3d Division, escorted by the 359th and 364th Fighter Groups. Results at St. Dizier airfield were very good: 13 out of 31 enemy aircraft on the field were probably damaged or destroyed—one or two of the probables were piggy-backs.* Hits were also made on

* German planes carrying smaller planes.

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the dispersal area, workshops, and along three-fourths the length of the north-south runway.²⁸

By 3 September airfields in east-central France were crowded with enemy aircraft and supplies withdrawn from southern France in the face of the highly successful Allied invasion there (DRAGOON) on 15 August 1944. Little support was furnished by the Luftwaffe for the retreating and disorganized German armies, the greatest effort put up in one day amounting to only about 125 sorties. The German fighter units had been forced to make three major withdrawals and were heavily out-numbered whenever they took to the sky. At the time of DRAGOON their single- and twin-engine fighter strength on the western front totaled 685 aircraft, while in Germany and central Europe it had increased to 1,190, centered apparently in the Berlin-Leipzig area. By the end of September the GAF was operating entirely from German bases.²⁹

The prospect of having to use their home airfields was not a bright one for the Luftwaffe, since the majority of them were unsuitable for tactical operations. Many were small, the runways averaging only 1,300 yards; dispersal facilities had not yet been developed, perimeter parking being the rule; and at most of them the servicing facilities and repair shops were grouped in a highly vulnerable cluster at the end of the field. From August on, the Eighth Air Force took full advantage of this situation.*³⁰ By 10 September GAF twin-engine fighter aircraft on the western front numbered only 125 and their single-engine units had been moved even farther back. In comparison, the Luftwaffe's strength

* See Appendix 4 for a statistical summary of airfield attacks on Germany proper.

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in Germany and central Europe was 1,090 single-engine fighters and 690 twin-engine, of which 565 were night fighters. This relocation continued to disrupt the already tottering Luftwaffe organization, whose difficulties were compounded by the increased ground strafing attacks by Eighth Air Force fighters; in one day alone, this tactic resulted in 142 German planes destroyed.³¹

On 10 September 1944, the Eighth Air Force dispatched 385 3d Bombardment Division B-17's to bomb Nurnberg tank factory, Furth aircraft components plant, and Giebelstadt airfield; results at the latter were good, with hangars, barracks, and buildings hit and left in flames. The escorting 55th, 339th, and 56th Fighter Groups added to the melee by strafing airfields and parked aircraft. Three days later, 342 B-24's of the 2d Bombardment Division were dispatched against an ordnance depot, a motor plant, and an oil depot as well as an airfield in the Ulm area. At the field, Schwabisch Hall, patterns of demolition and incendiary bombs were seen to burst squarely across the main hangar area, landing ground, and runway; fire enveloped three main hangars and a village dispersal area. The 4th, 479th, and 361st Fighter Groups strafed airfields at Gelchsheim, a satellite west of Villingen, and a landing ground north of Goppingen.³²

During the rest of the month few bomber missions were directed against the airfields. Indeed, by 26 September attacks on fields in France had ceased entirely, most of them overrun by Allied ground forces and/or deserted by the retreating Luftwaffe.³³ Throughout the following month the GAF made no serious effort at intercepting Eighth Air Force bomber

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formations. The only two days during the month when combat with the Luftwaffe assumed any real importance were 6 and 7 October, when German fighters made mass attacks on Allied planes. Although Allied losses on these missions were high, from 8 October until 1 November Eighth Air Force heavy bombers made no claims at all against enemy aircraft, mainly because none appeared to oppose them.³⁴

In November the effort against airfields was about the same as that in October. Only on the 10th of the month was there a major Eighth Air Force attack; on that day 740 heavy bombers were dispatched against four airfields in west central Germany. Hangar facilities were damaged at Hanau/Langendiebach, a number of buildings were destroyed or damaged and the dispersal area and landing ground were cratered at Wiesbaden, and at Butzweilerhof and Ostheim in the vicinity of Cologne a few buildings were slightly damaged and the landing ground at one field and the dispersal area at the other were cratered.³⁵ Enemy fighter reaction during the month increased, however, no doubt because of the increasingly deep penetrations into Germany by Eighth Air Force bombers; on four occasions up to 500 fighters scrambled to the attack. By 26 November, GAF defensive activity had reached a new high. The reason for this rejuvenation lay in the long-term policy of building fighters at the expense of bomber types and of committing large forces to battle only when critical ground or air operations demanded a strong countereffort. The main purpose of the reinforcements of the GAF on the western front became apparent when the Germans launched their offensive in the Ardennes on 16 December 1944.³⁶

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It was evident that if the scale of enemy attack remained as strong as it was at the beginning of the counteroffensive, it would be impossible for the Allied air forces to make their weight fully felt in cooperation with the ground forces. This fact led to the decision to divert a large part of the air effort, for one day at least, to attacks on enemy airfields, despite the fact that it would decrease the effort on tactical targets and enemy lines of communication at a crucial time. Consequently, on 24 December 1944 the Allied air forces put up a total of 7,520 offensive sorties in a series of concentrated attacks on the principal airfields used by the GAF in supporting the Ardennes counteroffensive. Of these, the Eighth flew 1,277 heavy bomber sorties and dropped 3,506.9 tons of bombs on 11 airfields in the tactical area.^{*37} These heavy attacks, which smashed installations and closed many of the larger enemy airfields east of the Rhine, denied the Luftwaffe important bases at a time when the rapidly deteriorating ground situation on the western front generally (and in the Ardennes sector particularly) needed all the air support the GAF could supply.³⁸

In spite of the losses incurred in combat and the Allied bomber attacks on its bases, the GAF continued to support its armies during the remaining days of December. On the 24th the Eighth Air Force was opposed by approximately 300 fighters, on the 25th 350 defensive fighters were active, and between 200 and 250 fighters opposed daylight operations on 27 and 31 December. In addition, an average of 50 to 75 night fighters were active against RAF Bomber Command on each night it operated.³⁹

During the fierce air battles in the second half of December, the

* See above, pp. 80-81, for further details.

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Germans realized that the Allied air superiority was overwhelming. To at least ameliorate this power, the GAF made a desperate effort on 1 January 1945 to cripple the Allied tactical air forces by a concerted blow at their bases in Holland, Belgium, and France. Although greatly handicapped by a lack of experienced pilots, between 700 and 800 enemy aircraft raided these bases to claim 127 Allied aircraft destroyed and 133 damaged; only 11 Allied pilots were lost, however. In comparison, the Luftwaffe saw 160 of their planes shot down in dogfights and nearly 300 (according to Allied claims) by antiaircraft fire. Furthermore, and perhaps most important, it was estimated that the attack cost the Luftwaffe between 200 and 250 pilots, which they could ill afford to lose.^{*40}

At the beginning of the year 1945, the enemy already had a number of jet aircraft in operation, planes superior both in speed and in armament to Allied conventional fighters, and there was every evidence that the Germans intended to produce them on a large scale.[†] To check in some way the production and employment of this new menace, it was decided that the heavy bombers attack jet production, training, and operational establishments.⁴¹ Although oil still held first priority in the target directives with communications in the Ruhr second, General Spaatz directed that the anti-jet campaign be given the same priority in the Eighth Air Force as oil was for the Allied air forces as a whole.⁴²

* These total claims may be too high (although they have not been completely disproved), for only 91 enemy aircraft were recovered within Allied lines, 63 prisoners captured, and 33 bodies found.

[†] Although the jets were admittedly superior to Allied conventional fighters, on 19 March the superiority of Eighth Air Force fighters over orthodox Luftwaffe aircraft was signally demonstrated. A force of 48 P-51's engaged 6 jet fighters and 45 Me-109's in a dogfight, and when the dust cleared, 34 enemy aircraft had been destroyed, 1 probably, and 13 damaged at a cost of only 5 P-51's. (See 8th AF TMR's, 19 Mar. 1945.)

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In spite of this change in strategic bombing policy, no large effort could be made against jet targets during January, because of the protracted bad weather; the Eighth Air Force did fly 455 sorties, however, against enemy airfields and aircraft centers, dropping a total of 880 tons of bombs.⁴³ The reason for the sharp cut in attacks against enemy airfields during this period, besides the weather, was the almost complete inactivity of the GAF; snow lay deep on their airfields and they had no equipment to remove it. Fields without surfaced runways were entirely unserviceable until the snow melted, and even then the melting snow produced such impossible bogs on the field that the GAF had to await the sun's slow drying-off process.⁴⁴

In February Eighth Air Force fighters strafed several airfields with good results, but the main heavy bomber effort against them was taken over by the Fifteenth, which flew 336 sorties against enemy fields in southern Germany and Austria, dropping more than 700 tons of bombs.⁴⁵ By 25 February the unsurpassed scale of daylight bombing deep in Germany by the Eighth Air Force, accompanied by the Allied and Russian offensive, revealed the inadequacy of the German Air Force. Faced with the problem of neutralizing a highly superior tactical air force, the GAF found itself with almost no fighter defense against strategic attacks carried out over wide areas from Bremen to Vienna by the Eighth and Fifteenth Air Forces. The change in tactics inaugurated during Operation CLARION* by the Eighth--that of bombing in small formations at medium altitudes--increased the vulnerability of Allied bombers greatly, and yet the only interceptors mustered by the GAF were small formations of Me-262's which

* See above, pp. 116-26.

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did much to worry but little to deter the operations as a whole.⁴⁶

The decrease in the over-all number of attacks during the first two months of 1945 combined with the persistently bad weather to enable the Luftwaffe to improve its position somewhat. With the advent of good weather, the first week in March, a considerable upswing in GAF fighter activity was evidenced by the estimated 300 to 350 tactical sorties on 2 March. And for the first time in nearly nine months, German bombers operated offensively against England--some 70 aircraft attacking the Midlands and East Anglia.⁴⁷ Accordingly, there was a large increase in Allied attacks on airfields in March. Again it was the task of the Eighth and Fifteenth, which together flew a total of 4,710 sorties and dropped over 11,000 tons of bombs. The attacks were directed not only against airfields where jet aircraft were based but against fields used as experimental, assembly, and training bases. In addition, about one-half of the effort against the GAF in March was against enemy fields in preparation for and support of the assault-crossing of the Rhine.^{*48}

A total of 16 jet airfields were bombed by the Eighth Air Force on 21 and 22 March 1945. By the end of the second day Achmer, Giebelstadt, Hesepe, Hopsten, Kitzingen, Frankfurt, Rheir Main, Handorf, and Rheine, all in Germany, were rendered completely unserviceable for jets, and there was every indication that they would remain so. Schwabisch Hall, Marx, and Ahlhorn, also in Germany, were repaired just enough to allow the remaining jets to get away to the Munich-Nuremberg sanctuary. Strangely enough, the GAF did not put up a very strong defense against these

* See Chapter IX for more detailed information.

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attacks, although many aircraft were sighted on the ground. Perhaps the lack of pilots had reached its ultimate degree; at any rate, the Eighth's fighter-escorts and the tactical air forces' fighters and fighter-bombers took advantage of the situation to destroy a large number of the grounded aircraft.⁴⁹ On 24 March airfield attacks were continued by the Eighth Air Force, in the morning to catch the enemy fighters on the ground, in the afternoon to smash them as they scrambled to the defense. In all, 16 fields were hit, and reconnaissance showed the attacks to be very successful. The best evidence of their success, however, was the low-scale enemy reaction over the battle area: less than 100 enemy aircraft were sighted in the air during the day.⁵⁰

Throughout April the attack was pressed, by the Eighth, the Fifteenth, and the Ninth Air Forces, and the RAF Bomber Command.⁵¹ An unusual incident occurred on 7 April, when 503 B-17's of the Eighth were on their way to bomb two airfields and oil storage and ordnance depots in Germany. They were attacked by a force of Me-109's, FW-190's, and a few Me-262's, which had got through the fighter screen in the Dummer and Steinhuder Meer area; 11 B-17's were shot or literally knocked down. No less than five of the bombers were destroyed by collisions with enemy aircraft, although more success was achieved by shooting down the bombers at point-blank range on the ramming run than by actual collision. These suicide attacks were performed by German pilots who were volunteer members of an organization called the Sonderkommando Elbe or Sturmgruppe, which was first set up so that flyers who had been accused of cowardice or other offenses could wipe these crimes off their records by volunteering.

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Later, so many requests were received from pilots who had lost relatives and property in Allied bombing raids, that disciplinary cases formed only about 10 per cent of the suicide units. On this particular day, which was the first time the tactic had been reported, the new method of attack proved very costly, for the total claims against the enemy by Eighth Air Force bombers and fighters were 104/19/32. This was the greatest loss in proportion to the effort employed that the GAF defensive fighter force had ever experienced.⁵²

Since the establishment of the Rhine bridgeheads in March 1945, Allied ground forces had captured or neutralized about 70 enemy airfields and crippled the operational value of many more. GAF operational units, reserve aircraft, and training units were compressed into a relatively small area with the inevitable confusion attending overcrowded facilities and communications difficulties. Such large numbers of aircraft accumulated on all remaining fields that by 7 April it became evident that operations were at best hazardous, at worst non-existent because of a lack of fuel. By 20 April the Marx group of airfields was rapidly going out of use and other fields were prepared for demolition; the Luftwaffe was retreating to the Prague and Munich area. Allied strafing attacks took a heavy toll on the packed fields, until by the end of the month the Luftwaffe had virtually ceased to be operational.⁵³ The Eighth Air Force had played its part and played it well.

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Chapter VIII

MISCELLANEOUS TACTICAL OPERATIONS

Of the many Eighth Air Force operations leading up to the final smashing of Germany in GRENADE and VARSITY,* none were so unheralded and underpublicized as those which border on, but perhaps do not completely cross, the limits of this study. Briefly, they are unclassifiable. Yet, to a full understanding of the part played by the Eighth Air Force in the Normandy success, the Battle of France, and the final onslaught on the Reich itself, these miscellaneous operations are indispensable. Though they are treated in a rough chronology at best and included rather awkwardly here toward the end of the study, this chapter is to be read in conjunction with all the preceding accounts of events contemporary with the following operations, which are, in effect, an integral part of the prelude to GRENADE and VARSITY and V-E Day.

Attacks Against Radar Installations

During the period D minus 30 to D-day, the Allied air forces attacked enemy radar wireless stations along the Channel coast from Calais westward. The campaign against radar installations was particularly successful in that it destroyed vital radar stations and comprehensively jammed others in the system.¹ Though the Eighth Air Force played only a small part in the Allied effort, that part merits at least a mention here.

Since it is not possible to state with certainty that the enemy was completely unaware of the cross-Channel assault movement, the success of the plan to disrupt his radar coverage and wireless telegraph

* See Chapter IX.

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facilities can only be judged from the results obtained. Between 0100 and 0400 hours on 6 June only 9 enemy radar installations were in operation, and during the whole night the number of stations active in the NEPTUNE area was only 18 out of a normal 92, with no observed activity at all between Le Havre and Barfleur. No enemy attacks were made until approximately 1500 hours on D-day, although there were more than 2,000 ships and landing craft in the assault area and a very large airborne force had been routed down the west coast of the Cherbourg peninsula right over the excellent enemy radar in the Cherbourg-Channel Islands areas.² The Eighth's effort, then, however small, was far from wasted.

Coastal Batteries

Also before D-day, the Eighth Air Force flew 184 sorties and dropped 579 tons of bombs on coastal batteries inside the assault area; outside that area the Eighth flew 1,527 sorties, dropping 4,559 tons of bombs. Fifty-two targets, 32 of which were in the Normandy area, were allotted to the Eighth, and of this number, 6 batteries in the Normandy area and 16 in the Pas de Calais area were actually attacked.³ The campaign ran from D minus 6 through D minus 1, the object, to destroy as many of the principal long-range coastal batteries in the NEPTUNE area as possible without jeopardizing the security of the exact landing locations.

Consequently, most of the bombing had to be done in the Pas de Calais (FORTITUDE) area, which would serve as a feint as well as to hold the very substantial German defense forces in that area. All of the Eighth's bombing was confined to the coastal defenses in the FORTITUDE area until D minus 1, when a portion of its force was allotted to attack certain

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important batteries in the Normandy sector.⁴

On D-day the Eighth Air Force bombed coastal batteries, strong points, and defended areas on the two British landing beaches and on OMAHA beach where the American V Corps landed.* From that time on until September 1944, coastal batteries were hit sporadically by the Eighth's heavies. The fortifications at Brest also received a good share of the Eighth's effort in this type of operation; they were hit from time to time during the whole period, the culmination being reached during the Brest campaign from 25 August to 18 September, when the Eighth Air Force heavies were called on to aid the ground operations.⁷

Operation VENERABLE

Long after practically all of France had been liberated, the enemy maintained a pocket of resistance at the mouth of the Gironde River, the entrance to the port of Bordeaux, as a part of the German plan to deny the port facilities of liberated countries to the Allies. In December 1944 an air-ground operation called INDEPENDENCE was planned to eliminate this pocket. It consisted of three small-scale operations by the Eighth Air Force against a coastal battery at Point de la Coubre in conjunction with a large-scale attack by RAF Bomber Command against Royan. Although INDEPENDENCE was temporarily abandoned on 9 January 1945, it was revived in early April and renamed VENERABLE. The operation was made possible at this time only because the rapid ground advances into central Germany were overrunning many of the targets rated as first priority for the bomber forces.⁵

* For details of the landings see above, pp. 23-29.

⁷ See above, pp. 61-62.

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Operation VENERABLE combined the efforts of two units of the U.S. First Tactical Air Force (the 42d Bombardment Wing and the Western French Air Force), the Eighth Air Force, a unit of French troops known as the Army Detachment of the Atlantic belonging to the 6th Army Group, and some French naval units. The task assigned to the air forces was that of attacking strongpoints and artillery emplacements selected by the ground forces prior to, during, and after D-day. Representatives from the above-mentioned commands attended meetings at First Tactical Air Force Headquarters, and it was decided that the ground attack be preceded by air assaults to soften the enemy defenses. The Western French Air Force was to begin operations on 13 April while the Eighth Air Force and the 42d Bombardment Wing were to start their missions on 14 April. The ground attack was to be launched immediately after the second day of Eighth Air Force operations.⁶

On 13 April the medium and fighter-bombers of the recently expanded Western French Air Force began to attack the gun positions and defended points to the north and south of the Gironde River; 76 aircraft of this force dropped 60 tons of bombs.⁷

On the following day 1,125 Eighth Air Force heavy bombers of 1,161 airborne dropped 3,309.8 tons of bombs on 23 enemy defensive installations consisting of AA sites, artillery positions, and strongpoints in the three principal fortress areas, Royan, Pointe de Grave, and Point de la Coubre in southwestern France. The bombers were divided into four forces for the day's operations and they all bombed visually, some aircraft hitting as secondary targets those which were primaries for other units.

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There were several cases of squadrons making second runs, mostly because smoke obscured a number of the targets. There was frequent interference from other units during the bomb runs, the most disastrous being when one unit of the first force hit a B-24 squadron of the second force with some of its bombs and destroyed two bombers. These, however, were the only casualties of the day, although there were five cases of severe damage caused by take-off and landing accidents. Antiaircraft fire was meager and inaccurate, and no enemy fighters intercepted (none were believed to be in the Royan area). Twenty-six P-51's did come along, however, but only as weather scouts.⁸ On the same day the Western French Air Force flew 104 effective sorties, and 86 planes of the 42d Bombardment Wing dropped 120 tons of bombs on VENERABLE targets.⁹

When the operation against ground installations in the Gironde estuary was accomplished on 14 April, it was expected that the attacks would be renewed on the next day, weather permitting. Although early weather forecasts predicted visual conditions in the Bordeaux area for the 15th, it was not until the afternoon operations conference on the 14th that the decision was made to employ the entire Eighth Air Force against VENERABLE targets. The objectives were, on the whole, the same as those attacked previously (Royan, Vaux-sur Mer, Pointe de Susac, Pointe de Grave, and Point de la Coubre), and the commander of the ground forces was informed that this second heavy bomber operation would be the signal for launching the ground assault.¹⁰

As plans for the operation developed, it was decided that inasmuch as stocks of napalm, originally intended for use against the Siegfried Line, were on hand, this would be an ideal opportunity to initiate their

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use by Eighth Air Force heavy bombers. These bombs together with standard incendiaries were allotted to the 2d and 3d Air Divisions, while 1,000- and 2,000-pound GP's were to be carried by the 1st Division, whose main force was to be sent against nine coastal batteries. A special force of three groups (the 351st, 401st, and 457th), designated as a "circling fire brigade," was to orbit around the initial point, and at the discretion of the air commander was to be committed in squadron strength against any installation which after attacks by the main force continued firing. The bombers were to operate in four forces, and in order to protect the ground forces who were to attack immediately after the air assault, no bombs were to be dropped after 1200 hours except those of the special orbiting force. The usual weather scouts were provided in addition to the Chaff and Carpet measures regularly employed by all forces and a special screening force of four Mosquitoes. Every precaution was taken to avoid bombing friendly forces; bombing altitudes of 15,000 feet were specified to promote accuracy.¹¹

A total of 1,340 Eighth Air Force heavy bombers sortied on 15 April, and of these, 1,280 bombers released 2,780 tons of napalm, GP, and incendiary bombs on 16 of the 18 primary targets assigned. When the faster B-24's of Force II arrived over the targets sooner than scheduled, they were forced to maneuver to avoid interfering with Force I; still, a number of second runs were necessary to avoid interference with other units at the targets. Smoke obscured some targets and H2X bombing aids were used on three occasions. One squadron of the first force jettisoned its bombs in the Bay of Biscay to avoid bombing after 1200 hours, but

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another, on the second run, released its bombs at 1210 hours, fortunately with no disastrous results. The special force circled for more than an hour before bombing instruction were received from the air commander; then all squadrons bombed their designated targets, except one which missed by a mile and a half. Results for the whole mission were generally good to very good, which was thought to be a direct result of lowering the bombing altitudes from the previous day's 13,000-24,000 to 13,000-17,500 feet. There were no losses at all on the 15th.¹²

Since this mission was the first on which Eighth Air Force heavy bombers had ever used napalm, a ground survey party was dispatched to the area to study the effectiveness of the weapon. They had previously observed the actual bombing and later advanced with the French ground troops into some of the towns and strongpoints hit. In addition to making observations, German prisoners were interrogated, and discussions were carried on with French commanding officers and their staffs as to the relative effectiveness of the fire bombs. It was found that they had little or no effect against the structures and gun emplacements, none against personnel in shelters, and very little against personnel in the open. Many of the napalm bombs tumbled badly during their fall--several exploded in mid-air, and a number of others disintegrated in flight without exploding. The napalm tanks which fell in open fields or on soft ground penetrated to a depth which made them practically ineffective; those fire bombs which struck on harder surfaces, such as roadways and strongpoints, had a larger burning radius but were relatively ineffective as to scattering fire or intensity of heat. On an average, the effective,

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though far from fatal, radius of these incendiaries was 10 to 15 feet. Since the psychological effect upon troops was also found to be negligible, it was recommended that napalm bombs not be used again in similar attacks.

In comparison, the HE bombs dropped on 14 April were successful in neutralizing emplacements, but in general were ineffective against personnel in heavily reinforced shelters. German prisoners who had been in underground shelters during the HE bombing stated that although the napalm attack bothered them very little, if they had been in trenches and in the open during the preceding day's attacks as they were on 15 April, their morale would have been shattered. The fort of Royan, an old construction of stone masonry some of which had been reinforced with concrete and timber, was also vulnerable to the HE bombs and was destroyed. In a number of the emplacements, however, the guns were not seriously damaged. The German officer in command of all the gun emplacements and flak batteries in the defense area admitted that all of his batteries were put out of action by the complete disruption of communication and control systems. Thus, it may be said that the VENERABLE operation did enable the ground troops to move in on the enemy positions, despite the fact that napalm failed to accomplish its part of the job.¹³

On 16 April when weather forecasts indicated possible visual conditions in Germany, a large number of transportation targets between the Russian and American front lines were submitted by the Eighth Air Force to USSTAF for clearance. At 0245 hours on 16 April, however, the Atlantic command post of First Tactical Air Force, which had the responsibility for coordinating air activities in connection with eliminating German pockets of resistance in western France, requested that the Eighth Air

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again raid VENERABLE targets. Insufficient time for preparation made it impossible to allocate more than one of the three air divisions to this task; the 3d was given the assignment and its originally scheduled targets were canceled.¹⁴

The target specified was a tank-ditch defense about three and a half miles long extending across the Pointe de Grave peninsula on the south side of the Gironde River. An estimated 5,000 enemy troops of the Royan garrison were holding out behind these defenses. In order to soften these forces for ground attack, 10 aiming points at strategic positions along the defense line were assigned to the 500 bombers of the 3d Air Division. Bombing altitudes of 15,000 feet were ordered, no alternative targets were designated, and bombing was again prohibited after 1200 hours. Provision was made for a command aircraft to precede the bombers by 30 minutes for the purpose of maintaining liaison between the ground and the air forces.¹⁵

Altogether 486 Eighth Air Force bombers released 1,451.7 tons of bombs from altitudes of 14,200 to 16,450 feet with generally good results. Approximately 65 to 70 per cent of the line was affected, especially the eastern half which was unprotected by woods. Only one group encountered antiaircraft fire but no planes were lost.¹⁶ Four days later, speeded up considerably by the air attacks, the campaign ended with the last enemy pockets of resistance in the Gironde estuary being cleared. The port of Bordeaux was now open for Allied use.¹⁷

Air-Sea Rescue

Air-sea rescue missions were flown largely by the RAF on D-day and immediately thereafter, since it was the responsibility of the Air Defence

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of Great Britain to provide aircraft for searches in the battle area for the forces engaged in Operation NEPTUNE. Bomber formations reported all rafts, dinghies, and parachutes sighted so that a fix could be obtained and immediate action could be instituted to effect the rescue of distressed personnel. Individual dinghies were issued to all crew members to increase their chances of being rescued, and the high-speed launches attached to fighter-direction tenders during the invasion period saved a great deal of time in rescue operations.¹⁸

On 9 May the Eighth Air Force began its own air-sea rescue missions, which were continued until September 1944. Although this service began on a very small scale, the Eighth's contribution to D-day air-sea rescue being very small, in July equipment turned over to air-sea rescue units included P-47's, P-51's, B-17's, PB4's, and high-speed 85-foot launches. By August the unit was functioning in high gear: for the period 6 August to 1 September, 422 aircraft were dispatched by the Eighth Air Force on air-sea rescue missions, and 70 individuals were rescued from ditched aircraft in the English Channel or the North Sea.¹⁹

Leaflet Drops*

The purpose of all leaflet drops was the reduction of the enemy's ability to resist by persuading individual soldiers to surrender or desert, or by influencing civilians behind the lines to interfere wherever possible with the enemy's military operations and to confuse his communications. The over-all policy was decided and the leaflets

* See AAF Reference Histories No. 21, Special Operations: AAF Aid to European Resistance Movements 1943-1945.

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written by SHAEF's Psychological Warfare Division, headed by Brig. Gen. Robert A. McClure, working in close coordination with G-2, G-3, and G-5 SHAEF. Leaflet policy was constantly coordinated with tactical ground units by SHAEF's Prisoner of War Division representatives at the front, in order to insure that the leaflets were pertinent to the particular tactical situation at hand.²⁰

These "tactical" leaflets were of two general types: direct surrender appeals unqualified by reference to any particular tactical situation, and situation leaflets in which a surrender appeal was strengthened by a description of the untenable situation of the individual soldier. In addition, the daily newspaper Nachrichten fur die Truppen (News for the Troops) was used on both front-line and civilian targets. The paper depended for its appeal on up-to-the minute news otherwise unavailable, and for its effectiveness on articles and/or interspersed comments aimed at undermining the German's faith in his leaders and subtly convincing him of the hopelessness of prolonged resistance.²¹

From D-day on, Eighth Air Force heavy bombers dropped leaflets on all sectors of the western front. The bulk of the effort was carried out by the 406th Bombardment Squadron, assigned solely to the task of dropping leaflets at night; most of its missions resulted from direct requests for tactical leaflet drops by ground commanders. In addition, propaganda "bombs" were dropped by the daylight bomber forces on all missions to deep strategic targets.²²

Since the propaganda bombing by the Eighth Air Force during the western Europe campaign was a continuous tactical operation, it can only be reported adequately in terms of daily leaflet missions and the specific

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propaganda message adapted to constantly changing tactical targets. This, however, requires a full study by itself. To give a brief picture, however, the themes of some of these leaflets will be considered here, especially those during the period from D-day to the middle of September.

Leaflet dropping operations from 6 June to 27 July 1944 covered consolidating the beachhead, the isolation of Cherbourg peninsula, and the capture of Cherbourg itself. The first Allied air mission over the continent in the early hours of D-day was that of the 406th Bombardment Squadron which dropped leaflet warnings to French civilians of the bombings to come. Regular bombing missions during the day also dropped tactical combat leaflets, and the 406th on a return assignment that night dropped still more. The main themes during the period were (1) the unmatched weight of Allied arms; (2) the pincer movement closing in on Germany from four separate fronts—Italy, Russia, the air over the homeland, and the western front; and (3) the inability of the German war machine to support the "human land mines" left to defend the French coast. Finally in the closing stages of the period, a concentration of leaflets stressed the hopeless situation of the Cherbourg garrison.²³

From 27 July to 16 September 1944 leaflet-dropping operations encompassed the breakthrough at St. Lo, the thrust to Avranches, the further thrusts south, east, and north to loop around the enemy's strength in the west and destroy it as it squeezed through the Falaise gap, and the harassing chase of the defeated enemy across France to the first outposts of the Siegfried Line. Leaflet themes were again the overwhelming weight of Allied materiel and production potential; the impossibility of a German

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soldier's surrendering, as exemplified by the surrender of the commander of the Cherbourg garrison; and the significance of the fall of Cherbourg. Then, as the jaws of the Allied trap closed at Falaise, leaflets urging "Stay Alive!" and "Do as Thousands of Your Comrades Have Done!" were rained down. Finally, as German's shredded armies fled across France, the details of her defeat were pounded into her already disillusioned soldiers with "The Slaughter That Was Falaise," "The Road Back," "Falaise Was the Pay-Off," and "Why Die in the Last Weeks of the War?"²⁴

Intelligence reports received from the ground forces and other sources indicated that those leaflets dropped on German troops behind the beachhead areas resulted in the surrender of numerous prisoners of war. Hundreds of Poles, Russians, and other non-Germans serving in the German Army came into the American lines and gave themselves up. A majority of them carried leaflets guaranteeing safe conduct and good treatment after their surrender. In addition to these direct results, leaflets dropped on enemy-occupied territory were most helpful to the resistance movements in keeping them informed of the progress of the Allied forces, and among the civilian population won many additional supporters to these resistance movements.²⁵

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Chapter IX

GRENADE AND VARSITY - THE END OF THE WAR

After the advance of the U.S. Ninth Army to the west bank of the Roer River had been successfully completed, attention was turned to the immediate problem of seizing all ground on the west bank of the Rhine preparatory to an assault crossing. By 16 February the Ninth Army had almost completed the concentration of a powerful striking force, assembled for an all-out offensive--Operation GRENADE--the objective of which was the destruction of all German forces west of the Rhine River in the area bounded by the Roer, Erft, Rhine, and Maas rivers. The attack was to be coordinated with the U.S. First Army protecting the Ninth's right flank, and the Canadian First Army* to the north, which had launched its attack earlier, moving south to clear the area between the Maas and the Rhine. The British Second Army's task was to hold the line along the Maas River from Roermond to Boxmeer and later to cross the Maas River in the Venlo area.¹

Flood conditions along the Roer River caused the postponement of D-day which had originally been set for 10 February. At a conference on 21 February the army engineers stated that the river could be crossed and bridged on 23 February, despite the fact that it would not even then be confined within its banks. Consequently, on 21 February it was announced that 23 February 1945 would be D-day.²

From 11 to 22 February several changes in the enemy's flak defenses were observed: the guns defending Venlo were removed to the north to

* The U.S. Ninth, the Canadian First, and the British Second Armies comprised 21 Army Group under the command of Field Marshal Sir Bernard Montgomery.

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bolster the defense against the Canadian push, and an estimated 30 heavy guns, withdrawn from the Bocholt-Borken area north of Wesel, were sent west of the Rhine for the same purpose. The reports of fighter-bomber pilots at this time seemed to confirm the theory that the Ruhr and Rhine Valley static defenses had been weakened in favor of the eastern front. The period from 23 February to 2 March brought the collapse of that solid wall of antiaircraft defense which the enemy had maintained from the Rhine to the western front. From the beginning of Operation GRENADE until the armies reached the Rhine, the Germans were always able to put up an intense volume of light flak along the main line of resistance; as the Allied front moved forward and the enemy flak units tried to disengage and move to the rear, the heavy fire became spotty and inaccurate. Reports from pilots varied, indicating that guns were being emplaced momentarily around lines of communication, and then either withdrawn or destroyed as the Ninth Army advanced. Many flak batteries were overrun or captured before they ever got back across the Rhine.³

The primary air tasks in the original plan for Operation GRENADE were three. The first was the maintenance of air supremacy and the reduction of the German Air Force. On 9 February strikes on German operational air bases within 150 miles of the zone of operations were to begin; these were to be made by Eighth Air Force heavy bombers and medium bombers of both the 9th Bombardment Division and the British Second Tactical Air Force. Dive-bombing and strafing attacks were to be performed by fighter-bombers of IX and XXIX Tactical Air Commands and the British Second TAF. Targets for heavy and medium bombers were runways (especially those capable of handling jet aircraft), repair installations, POL, and

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ammunition dumps, while the fighter-bombers were to concentrate on grounded enemy aircraft. The second task was the isolation of the battle field beginning on 9 February 1945. All rail and road bridges across the Rhine River between Wesel and Bonn inclusive were to be destroyed by Eighth Air Force and RAF heavy bombers and mediums of the 9th Bombardment Division. The rail and road systems west of the Rhine which affected the movement of enemy troops and supplies into the zone of operations were also to be attacked. The last commitment was air-ground cooperation, which included nine separate phases, four of which were to be in conjunction with a coordinated attack by the First and Ninth Armies and the remaining five in cooperation with an attack by the First Army prior to that of the Ninth.⁴

Actually the Eighth Air Force part in this operation did not work out exactly as planned. Only one airfield was included in its list of objectives, the main emphasis being on transportation targets. During the first seven days of February very little flying was done because of bad weather, but between the 8th and the 21st the Eighth Air Force heavies, in addition to their regular strategic assignments, attacked the Wesel rail and highway bridges, marshalling yards, communication centers, viaducts, and one airfield, while the fighters strafed transportation targets. During this same period the tactical air commands also concentrated on strategic bridges and marshalling yards, the peak of their activity coming on 14 February when the bridges at Neuss, Nolthausen, and Zieverich were attacked by 31 squadrons and 140 tons of GP bombs.⁵ The rail-cutting program was started on 20 February and continued through the next day; rail lines were severed in many places and tactical reconnaissance reported very little traffic the day following the attacks. On 21 February alone, rail

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lines were cut in 109 places. To all practical purposes this closed the isolation plan until D-day, 23 February.⁶

The ground force assault crossings of the Roer River began on 23 February after a 45-minute barrage, and gains varied from one to four miles; more than 20 villages were taken by the 28 infantry battalions which crossed the Roer that night. On 24 February the town of Julich was captured and a number of others were cleared, and by the 26th the momentum of the attack carried well into the north and northeast. The operations of 28 February produced gains up to eight miles which included the capture of 40 towns and villages.⁷ By 1 March 1945 the ground forces were advancing rapidly toward the Rhine River, and on the following day a few small units actually reached the river. The town of Neuss was immediately cleared, but the Germans destroyed the Rhine bridge there on the 2d and the bridge at Uerdingen on 3 March, just as Allied units were advancing to its western end. After Rheinberg was taken on 6 March, the attack was shifted to the north toward the important town of Wesel as part of a movement, coordinated with the Canadian First Army, to clear the last pocket of enemy resistance west of the Rhine. On 10 March German resistance collapsed and on the following day Fort Blucher was cleared. This action completed Operation GRENADE; the Ninth Army was on the west bank of the Rhine River.⁸

Operation VARSITY (as the Rhine crossing of 24 March was coded) called for a simultaneous ground and airborne thrust in the Emmerich-Wesel area in order to seize a bridgehead on the Rhine. In preparation for and in conjunction with the Rhine crossings, an enormous concentration of bombs was dropped on enemy communications in the Ruhr and surrounding

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areas by the Allied air forces; these areas contained the principal communication facilities available to the German armies engulfed by Allied thrusts. The plan called for the sealing-off of the Ruhr by cutting a vital bridge or viaduct on every line in a wide arc from Bremen in the north, down the Weser River, through Bielefeld to the Coblenz area in the south.* The objectives were both tactical and strategic. The principal strategic purpose was to prevent shipment of hard coal from the Ruhr to central Germany where it was urgently needed after the Russian capture of the Upper Silesian sources. The tactical objective was to prevent the reinforcement and supply of defensive troops in the area designated the main point of attack for Operation VARSITY.⁹

On 7 March the 9th Armoured Division (First Army) began a drive down the west bank of the Rhine, and when they found the rail bridge at Remagen still standing, they promptly took advantage of the opportunity to drive across the river and establish the first Allied bridgehead over the Rhine. Despite fierce enemy counterattacks, this bridgehead was gradually expanded, and the strong force accumulated there was able to break out on 26 March and commence the southern phase of an encircling move around the Ruhr.¹⁰

While the crossings south of the Ruhr were the continuation of ground movements already in progress and had no special air preparation, the crossings in the north had considerable; moreover, large-scale air support was given during their progress, for it was believed that the industrial and productive capacity of the Ruhr was all-important to the continued

* See above, pp. 112-14 for further details on the isolation of the Ruhr.

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economic existence of Germany and to the sustenance of her armies. Therefore, it was hoped that a crossing in the north, by its greater immediate threat to the heart of Germany, would force the bulk of the German Army in the west into a decisive battle--and defeat. The preparations for this northern crossing may be said to have begun with the adoption of the plan to isolate the Ruhr. Not only had the cutting of the rail bridges severed the vital economic life of the Ruhr, but it had also considerably hampered large-scale troop movements west of the isolation line. In addition, throughout the first three weeks of March heavy-scale air attacks had been directed on the rail centers within the Ruhr and the areas to the north.¹¹

As early as September 1944 the First Allied Airborne Army Plans Section envisaged the use of airborne troops. There was a choice between using them to break the Siegfried Line or to assist in a crossing of the Rhine, and in view of ground advances it was decided in favor of the latter. On 7 November 1944 the first staff study for Operation VARSITY was published. The plan was kept current by frequent revisions as the tactical situation along the front changed, and on 10 February 1945 a final revised plan for VARSITY was completed. Air Staff SHAEF made available for the airborne operation all air forces in the theater. Air planning was initiated at a conference called by the air staff on 28 February which was attended by representatives of 21 Army Group, British Second Army, and the First Allied Airborne Army. The final air plan was completed and submitted to SHAEF on 20 March.¹²

On 24 March 1945 eight hours before the arrival of the airborne army, the ground forces were to cross the Rhine near Wesel under cover of

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darkness. Just prior to the crossing, the Eighth Air Force was to bomb jet airfields, communications targets east of the battle area, and flak positions near the landing zone. Approximately 240 B-24's were to resupply the British 6 and the American 17th Airborne Divisions on D-day, 15 minutes after they landed. Eighth Air Force fighters were to furnish a fighter screen east of the landing area during the landing operations in addition to flying diversionary missions. RAF Bomber Command was scheduled to hit communications targets and fly radar countermeasure missions, and RAF Fighter Command was detailed to escort the troop carrier columns from the United Kingdom until they were taken over by Second TAF. This command would also be responsible for air-sea rescue work. The Ninth Air Force was to supply air escort for the troop carriers from French airfields until this duty was taken over by Second TAF. Three additional duties of the Ninth, to be performed only if requested by Second TAF, were photographic reconnaissance, defense of drop and landing zones, and bombing. RAF Coastal Command was to carry out diversionary activities and air-sea rescue work. Second TAF was assigned to take over escort of the troop carriers from both RAF Fighter Command and Ninth Air Force and, in addition, to protect the drop and landing zones night and day. The IX Troop Carrier Command was to transport troops and equipment of the 17th Airborne and also to support RAF 38 and 46 Groups in lifting the British 6 Airborne.¹³ The mission of the airborne task force was to seize and hold the high ground five miles due north of Wesel in order to facilitate the ground action and establish a suitable bridgehead.¹⁴

The more immediate preparation for the assault crossing of the Rhine in the north took place three days before the official opening of VARSITY.

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During these three days, attacks against communications centers on the road and rail lines leading into the selected battle area were greatly intensified; both heavy and medium bomber forces took part in 43 separate attacks (3,471 effective sorties) to drop more than 8,500 tons of bombs. There were also a number of heavy, successful attacks on Luftwaffe bases in northwest Germany.* It was known that a considerable number of enemy aircraft, including a high percentage of his available jets, were based in this area, and in order to neutralize the fields during the vital period of the assault and to ensure the GAF's inability to interfere with Allied airborne operations, the attacks were continued through the day of the assault.¹⁵

On 21 March weather conditions were excellent and 1,385 Eighth Air Force heavy bombers sortied against 11 jet airfields and the Ruhland synthetic oil plant in Germany. The only enemy opposition was encountered by a formation which because of cloud conditions over Ruhland hit a tank factory and a marshalling yard in Germany: approximately 25 Me-262's knocked down 4 of the bombers, and 1 other was lost to unknown causes. Exclusive of the tank factory and marshalling yard, 1,210 effective bomber sorties were flown and 3,038.8 tons of bombs were dropped on airfield targets, with the loss of only two bombers. During the day's operations 827 fighters sortied, 772 of which were effective, and 29 of which dropped 500-pound fragmentation bombs on Hopsten airfield. Ten fighters were lost, but claims ran to 9 enemy aircraft destroyed in the air, 48 destroyed and 36 damaged on the ground.¹⁶

The weather was clear again on 22 March, so that 1,319 Eighth Air

* See Chapter VII and Appendixes 2 and 4 for further information on all airfield attacks.

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Force heavy bombers got off against 5 airfields and 10 barracks and military encampments in the Ruhr area. A total of 1,284 aircraft released 3,066.8 tons of bombs with generally good results. Only one heavy bomber was lost although there were four instances of severe damage, three from crashes and one from flak. The fighters, all P-51's, made 484 sorties, of which 466 were effective. Three of them were lost (2 from the 55th Fighter Group and 1 from the 355th) while strafing enemy airfields, but the 55th, 78th, and 355th Groups destroyed 17 enemy aircraft and damaged 11, including 13 destroyed and 10 damaged on the ground. Enemy opposition consisted of approximately 10 jets and 1 rocket-propelled Me-163.¹⁷

On the same day 700 RA^F heavy bombers, supported in part by 2 Eighth Air Force P-51 groups, executed daylight attacks against objectives in northwest Germany without encountering any enemy aircraft. Three groups of Eighth Air Force fighters also supported the Fifteenth Air Force B-17's dispatched against the Ruhland oil refinery north of Dresden. Between 15 and 20 jet and rocket-propelled enemy aircraft attacked this force and the P-51's assisted in breaking up the attack, though not until at least two bombers were destroyed.¹⁸

Three forces composed of 1,279 Eighth Air Force heavies sortied against 10 marshalling yards in northwest Germany on 23 March; of these, 1,240 aircraft visually released 3,484.2 tons of bombs on all primaries and several other targets while losing 8 of their number, mostly to anti-aircraft fire. Seven fighter groups, composed of 390 P-51's, furnished escort and none were lost. Only one enemy Ar-96 gave combat during the day's operations and it was shot down by the 359th Fighter Group; one

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enemy aircraft on the ground was damaged, also by the 359th, in spite of a prohibition against strafing attacks.¹⁹

In conjunction with the assault across the lower Rhine by 21 Army Group and the First Allied Airborne Army on the night of 23/24 March and the morning of 24 March respectively, the Eighth Air Force was scheduled to perform four tasks. The first was to furnish fighters for armed reconnaissance patrols throughout the day (24 March), to locate and destroy enemy ground movements, and perform escort duties for bomber attacks and supply operations. The second task involved the use of heavy bombers to attack jet airfields, particularly Rheine, Achmer, Hopsten, and Hesepe, for the purpose of preventing their use by the enemy during the critical phase of the Allied operation. The third task was a supply drop by 240 B-24's to units of the First Allied Airborne Army in two zones north of Wesel. And lastly, in the late afternoon heavy bombers were to attack airfields used by night ground-attack aircraft with emphasis on bases at Kirtorf, Stormede, Twente/Enschede, and Breitscheide.²⁰

March 24th dawned clear with visibility unlimited. Although excellent results had been obtained in the bombing of 21 and 22 March, it was requested that Achmer and Hopsten airfields be hit again; the 398th and 92d Bombardment Groups were ordered to the former, the 457th and 379th to the latter. In spite of the fact that they had been rendered nonoperational in the earlier attacks, reconnaissance reports revealed that the enemy was working feverishly to restore them. Hesepe and Rheine were also unserviceable after the two earlier attacks, but two groups of heavies were assigned to insure that they would remain nonoperational. The only other airfield attacked previously was Bad Zwischenahn and photographs indicated

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that two of its runways were unserviceable, but that the third could probably be repaired; therefore, the 385th and 34th Bombardment Groups were assigned for a repeat attack. Seven other airfields not attacked on either 21 or 22 March were included in the bombing plans in order to give almost complete assurance that jet airfields within range of the battle area would be unusable.²¹

The Eighth Air Force put up 1,050 bombers; a total of 1,033 dropped 2,986.7 tons of bombs on 12 airfields on the morning mission. Three B-17's were shot down by antiaircraft fire and two were lost to unknown causes; one of these was probably the straggler seen shot down by the only FW-190 attacking the bombers (the -190 was later destroyed by the bombers). In addition, five B-17's suffered severe damage. The 479th, 364th, and 56th Fighter Groups patrolling in direct support of the heavy bombers flew a total of 88 sorties, 85 of which were effective, and 12 P-51's served as weather scouts. There were no losses, battle damage, or claims. The reason for the small number of fighters was that little enemy opposition was expected because of the unserviceability of the fields near the battle zone, and it was felt that other fighters on area support nearby could render any additional assistance necessary. In a midday supply mission flown by 240 Eighth Air Force B-24's of the 2d Air Division, 237 bombers released their loads over the two assigned dropping zones with excellent results;* 14 B-24's were lost, however. There was no close escort by fighters, but five P-51's acted as a weather scouting force. In the afternoon another heavy bomber attack was flown by the Eighth against four enemy airfields known to be bases of night ground-

* See above, pp. 157-59 for a complete discussion of the Eighth Air Force VARSITY drop.

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attack aircraft. Breitscheide, which had been especially requested for attack, was not bombed because it was discovered that the GAF unit based there had been moved to an airfield at Ziegenhain. This field was thus included on the target list in addition to Stormede, Kirtorf, and Twente/Enschede, the last in Holland. A total of 446 heavy bombers sortied and of these, 442 aircraft dropped 1,109.5 tons of bombs; there were no encounters with enemy aircraft and no bombers were lost. Elements from the 55th, 353d, 56th, and 359th Fighter Groups formed five units and operated with the bomber forces, in addition to 17 P-51 weather scouts. Part of the 353d Group, diverted from the mission proper, was the only one to meet with enemy opposition: approximately 35 enemy aircraft shot down 5 American fighters but lost 27 of their own as well as 7 damaged.²²

In all, fighter operations for the day totaled 1,380 sorties, of which 1,294 were effective. Nine fighters were lost, and claims against enemy aircraft in aerial combat were 57 destroyed and 13 damaged while 4 were damaged on the ground. A total of 1,736 heavy bombers sortied, 1,720 of which were effective; 19 were lost and 1 enemy aircraft was claimed destroyed.²³ In the period 21 through 24 March, a total of 51 primary targets were assigned to the Eighth Air Force, 31 of them airfields, 10 military encampments, and 10 marshalling yards; each of these was struck at least once. Virtually all airfields within striking distance of the western front which were used or could be used by jet-propelled aircraft were attacked successfully. In addition, the four airfields from which night ground-attack aircraft would be likely to operate against the Rhine bridgehead and some six airfields in use by the

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principal conventional fighter units were rendered completely inoperative. The attacks on barracks and military encampments in the Ruhr on 22 March yielded good to excellent results. In further cooperation with the ground troops, the 24 March supply drop by bombers of the 2d Air Division was very successfully carried out, and fighter operations on this day were particularly effective. All in all, Operation VARSITY was eminently successful; the outstanding proof was the lack of German planes in the air: not more than 100 of them were sighted by all of the Allied air forces participating.²⁴

The tasks undertaken by the air forces on 24 March were a continuation of the pattern of the attacks during the preparatory period. Attacks on enemy flak positions were considerably intensified during the morning, both by medium bombers and by special squadrons of anti-flak fighters, whose mission was to silence guns, the location of which were revealed by their muzzle flashes, in order that casualties to the airborne forces would be reduced to a minimum. Other forces of both medium and fighter-bombers continued to attack towns throughout the area in addition to gun and mortar batteries. While the heavy bombers of the Eighth were attacking GAF bases to keep enemy aircraft out of the battle, RAF Bomber Command made a heavy attack on a rail center close to the flank of the assault. The Fifteenth Air Force, based in the Mediterranean, also contributed to the success of the air operations north of the Ruhr: by making a very deep penetration to attack a tank factory in the Berlin area, these bombers drew off GAF fighters based in central Germany which might otherwise have been committed against the airborne landings north of the Ruhr.²⁵

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The airborne troops were able to accomplish their mission of seizing and holding the high ground north of Wesel between the Rhine and Issel rivers. By 1330 hours on 24 March the 6 Airborne Division had taken its objectives and by 1530 had established contact with the Scottish 15 Infantry Division. In the meantime the 17th Airborne Division had made contact with the British 1 Commando Brigade and had taken its objectives by dark. This facilitated the quick establishment of a sizeable bridgehead and enabled the British Second Army to cross the river in force and to advance rapidly to the north and northeast. The fact that during the day the airborne troops took 3,500 prisoners from well-prepared enemy positions within the British Second Army area is indicative of the aid rendered the ground forces during the initial period of the crossing.²⁶ In addition to the crossings in the north, U.S. Third Army, after rounding up the enemy forces in the Saar-Palatinate, made two crossings of the Rhine on 23 and 25 March in the Mainz and Coblenz areas respectively.²⁷

During the last week in March when the Allied armies were throwing out armoured spearheads, which by April were encircling the Ruhr, Allied air forces were severely hampered by bad weather over their bases. Air cover was maintained over the ground forces, however, and many thousand sorties were flown on cooperation and armed reconnaissance missions. The heavy and medium bombers continued to attack the rail and communication centers leading from north and central Germany to the Ruhr, to insure that no formations which the enemy might be able to scrape up could be brought in to make a defensive line. The strategic bombers made several attacks on oil and naval targets in north and northwest Germany, and these operations drew off the GAF strength in that area which might

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otherwise have been committed against the ground battle. An important part in the operations was also played by the light bombers of RAF Second TAF, which, operating by night, made continuous attacks on the movements of the enemy. In the last week of March these harassing Mosquitoes flew more than 600 sorties and destroyed a considerable amount of enemy motor transport and rolling stock.²⁸

The encirclement of the Ruhr was completed on 1 April when the U.S. First and Ninth Armies met at Lippstadt. The large German force which was trapped in the pincers movement was only to hold out for 17 days, and on 18 April all organized resistance had ceased with the final rounding-up of more than 300,000 prisoners. Allied air operations within the encircled Ruhr were immediately reduced, since any large-scale destruction of communications or facilities would only hamper Allied armies during the occupation period. Air activities within this area were restricted to fighter-bombers, and their targets were only those directly affecting the resistance being put up by the encircled German forces.²⁹

Mopping-up Operations

While the U.S. armies advanced through central Germany to the Elbe and drove south to link up with the Allied forces coming up from northern Italy (thus exploding the theory of the "Redoubt*"), and while the British and Canadian armies swung north to overrun the northern portion of Holland and capture the great ports and naval bases of Bremen, Hamburg, and Kiel, the Allied air forces were called upon to undertake a large variety of support tasks over a very wide area.³⁰

Heavy and medium bombers throughout April continually struck at the

* An impregnable area in the mountains of southern Germany and northern Austria near the Swiss frontier where the Germans expected to hold out in a last-ditch defense.

rail centers in central and southern Germany as well as those in Czechoslovakia and Austria in order to hinder any movement of troops into the Redoubt area. They also made attacks on the enemy's ordnance and fuel depots so that the remnants of the German armies falling back would be able to replenish neither arms or equipment, nor to draw fuel from those depots.³¹ During the month, the Eighth Air Force heavy bombers attacked 109 marshalling yards and railroad centers and completed the disruption of the German transportation system which at this time was limited to Germany proper. Airfields, oil storage depots, and industrial targets were also hit.³²

At the same time, fighters and fighter-bombers of the Allied air forces continued to act as escort and cover for the Allied ground spearhead, day and night smashing up enemy movements by road and rail and attacking all points of enemy resistance in the path of the advancing forces. Because of the hurried nature of the enemy's withdrawal, the air forces were able to take an increasingly high toll of German transportation targets; the daily claims of motor transport and other road vehicles, including horsedrawn vehicles and rolling stock, reached staggering totals. As the enemy was forced back into an ever-contracting area, Allied fighters and fighter-bombers were presented with excellent targets in the GAF bases and airfields. Although the enemy had attempted to get as many aircraft as possible into the air, not only was a considerable portion of them shot down in combat, but many hundreds, grounded by lack of fuel, were destroyed in low-level strafing attacks by fighter-bombers on the

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remaining airfields in northern and southern Germany, Czechoslovakia, and Austria.³³

On 8 May the war in Europe was ended. The enemy had capitulated first in Italy and then in northwest Germany, and finally the formal act of surrender of all the German armed forces was signed. Thus, in complete and unconditional surrender, the land campaign begun on the bloody beaches of Normandy was completed in 11 months and 2 days in the heart of the Reich.³⁴

Conclusion

The campaign of the Allied air forces had, of course, been considerably longer than that of the land campaign. From the beginning of the war, continuous air attacks had been made against Germany and German-occupied Europe. Moreover, from the early days of 1944, intense preparation for the landings on the continent had occupied the attention of the Allied air forces and the vast contribution of these forces to the campaign had steadily mounted. How great the contribution was may be judged in some degree by the evidence of two of the foremost German commanders. Field Marshal Albert Kesselring in an interview after V-E Day gave three reasons for Germany's defeat: (1) Allied strategic bombing behind the German lines; (2) attacks by low-flying Allied fighter aircraft; and (3) terror raids against the German civilian population. Field Marshal Gerd von Rundstedt, former commander-in-chief on the western front, stated that four factors were decisive in his country's defeat: (1) the tremendous Allied superiority in the air which paralyzed movement of German troops; (2) the lack of fuel for tanks and planes after the loss of the

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Rumanian oil fields; (3) the systematic destruction by Allied air forces of rail and road communications; and (4) the destruction of industrial centers and the loss of Silesian coal which prevented the production of arms and ammunition.³⁵

Too much emphasis cannot be placed on the advantage to the Allied cause of having virtually unchallenged air supremacy in the European campaign. Probably the greatest single factor contributing to the success of ground operations was the comparative freedom from enemy air attack, which permitted unrestricted movement for the rapid regrouping of forces and a constant flow of personnel, munitions, and supplies to the front. Time- and labor-consuming camouflage procedures were done away with, and it was possible to convert a large proportion of the antiaircraft artillery forces to more pressing needs. Of major importance was the fact that the morale of Allied troops was never jeopardized by the nerve-shattering ordeal of large-scale air attacks. The reduced scale of air opposition made it possible for the Allied air forces to devote a great part of their effort to offensive operations against ground targets, and as a result, the enemy was denied the freedom of movement enjoyed by Allied troops and by contrast was forced to restrict his movements to the hours of darkness in order to avoid total destruction of his transports. By continuing the program of attacks on enemy airfields and through diversionary operations, the Eighth Air Force in conjunction with the tactical air forces assisted in driving the enemy from his forward airfields to inferior and crowded fields in the interior. During the course of these operations the Germans suffered terrific aircraft losses in the air and

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on the ground, which, representing a further reduction of the ability of the Luftwaffe to mount effective opposition to the heavy bomber attacks, added considerably to the progress of the war.³⁶ Thus, although born to be a strategic weapon, the Eighth Air Force, as the preceding pages amply indicate, adapted itself remarkably well to tactical operations to contribute in two ways, neither of small degree, to the final defeat of Germany.

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Appendix 1

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Total Eighth Air Force Effort
Dec. 1943-Aug. 1944
Related to CROSBOW Attacks*

	All Targets	CROSBOW Targets	Percentage devoted to CROSBOW
Aircraft dispatched	134,922	16,272	12.0
Aircraft attacking	106,352	10,484	9.8
Short tons of bombs dropped	267,604.4	30,300.2	11.2

Diversion of Eighth Air Force Strategic Effort
by CROSBOW Attacks

Possible Missions in lieu of CROSBOW Attacks	Number of Days	Aircraft Dis- patched on CROSBOW Missions	Percentage of Total CROSBOW Effort
Visual Missions to Germany	7	1,869	11.5
Blind Missions to Germany	15	4,256	26.2
Visual Missions to France	21	6,162	37.9
No Other Mission Possible because of Weather	26	3,985	24.4
TOTALS	69	16,272	100.0

* U.S. Strategic Bombing Survey, V Weapons [CROSBOW] Campaign, pp. 30-31.

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Appendix 2

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Eighth Air Force Attacks on GAF Airfields in
France and the Low Countries
6 June - 15 September 1944 *

<u>Date</u>	<u>Airfield</u>	<u>Number of Aircraft Attacking</u>	<u>Tons</u>	<u>Results</u>	
				<u>Installation</u>	<u>Landing Ground</u>
6 June	Caen/Carpignat	58	167	Nil	Nil
7 June	Kerlin/Bastard	132	284	Unobserved	Nil
	Laval	25	75	Unobserved	Nil
8 June	Gael	36	72	Good	Unobserved
	Le Mans	13	34	Unobserved	Poor
	Rennes	34	81	Poor	Nil
	Dreux	26	46	Unassessed	
10 June	Dreux	36	46	Unobserved	Poor
	Chateaudun	45	124	Fair	Fair
	Nantes/Chateau Bougon	55	100	Unobserved	Excellent
	Orleans/Pricy	66	182	Unobserved	Fair
	Gael	37	72	Unobserved	Poor
	Vannes	59	117	Unobserved	Poor
	Conches	39	101	Unassessed	
	Evreux/Fauville	65	165	Unobserved	Good
11 June	Berck-sur-Mer	38	82	Nil	Nil
	Berney/St. Martin	50	111	Nil	Excellent
	Conches	33	80	Nil	Excellent
	Greil	19	51	Nil	Poor
	Dinard/Fleurbaey	37	91	Nil	Nil
	Poix	13	13	Nil	Fair
	Beauvais/Nivillers	27	79	Nil	Fair
	Beauvais/Tille	12	30	Nil	Fair
	Beaumont-sur-Oise	36	98	Nil	Fair
	Beaumont-le-Roger	38	83	Good	Fair
	Corneilles-en Vexin	34	92	Nil	Poor
	12 June	Amiens/Clisy	23	45	Good
Cambrai/Epinoy		59	118	Unobserved	Fair
Cambrai/Wiergnies		69	137	Unobserved	Excellent
Conches		94	240	Unobserved	Excellent
Dreux		71	169	Poor	Excellent
Beaumont-le-Roger		51	129	Unassessed	
Montdidier		61	110	Unobserved	Excellent

* The Contribution of Air Power to the Defeat of Germany, Appendix C,
"The Attack on Enemy Airfields," p. 164.

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Results

<u>Date</u>	<u>Airfield</u>	<u>Number of Aircraft</u> <u>Attacking</u>	<u>Tons</u>	<u>Installation</u>	<u>Landing</u> <u>Ground</u>
12 June	Beauvais/Nivillers	25	63	Unobserved	Poor
(Contd)	Beauvais/Tille	68	164	Unobserved	Good
	Bernay/St. Martin	35	71	Excellent	Excellent
	Evreux/Fauville	69	144	Unobserved	Excellent
	Illiers-l'Eveque	61	191	Unobserved	Good
	Lille/Nord	83	146	Good	Excellent
	Lille/Vendeville	57	80	Unobserved	Poor
	Rennes	11	32	Unobserved	Excellent
	Roye/Amey	35	65	Unobserved	Poor
	St. Omer/Fort Rouge	35	75	Fair	Excellent
	Vitry-en-Artois	71	169	Fair	Excellent
	St. Andre-de l'Eure	67	174	Fair	Fair
13 June	Beauvais/Nivillers	56	124	Unobserved	Fair
	Beaumont-sur-Oise	94	241	Nil	Fair
	Dinard/Pleurduit	10	26	Nil	Nil
	Dreux	52	116	Unobserved	Excellent
	Evreux/Fauville	37	89	Unobserved	Excellent
	St. Andre-de l'Eure	40	90	Good	Fair
	Rennes	16	13	Good	Poor
14 June	Bretigny	69	127	Unobserved	Excellent
	Brussels/Melsbroek	61	141	Poor	Nil
	Cambray/Eninoy	24	31	Unobserved	Excellent
	Clastres	12	31	Unobserved	Good
	Chateaudun	103	215	Unobserved	Excellent
	Chievres	70	215	Unobserved	Excellent
	Coulommiers	24	46	Unobserved	Excellent
	Creil	91	125	Good	Excellent
	Coxvde	7	18	Unobserved	Excellent
	Denain/Prouvy	12	8	Nil	Nil
	Eindhoven	63	82	Unobserved	Fair
	Etampes/Mondesir	69	88	Good	Poor
	Florennes	95	327	Unobserved	Excellent
	Le Bourget	134	336	Excellent	Excellent
	Leon/Athies	39	99	Unobserved	Good
	Lille/Vendeville	55	152	Excellent	Fair
	Le Culot	52	44	Unobserved	Excellent
	Orleans/Ericy	97	182	Unobserved	Excellent
	Melun	50	82	Poor	Excellent
	St. Trond/Brusthem	35	70	Unobserved	Poor
15 June	Bordeaux/Merignac	144	343	Excellent	Fair
	Buc	21	63	Nil	Nil
	Evreux/Fauville	61	183	Unobserved	Excellent
	Etampes/Mondesir	45	118	Good	Excellent
	Gael	12	35	Unassessed	
	Orleans/Ericy	10	27	Fair	Excellent

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Appendix 2 (Contd)

Date	Airfield	Number of Aircraft		Installation	Results	
		Attacking	Tons			Landing Ground
15 June (Contd)	Guyancourt	46	67	Fair	Poor	
	Le Mans	12	46	Good	Poor	
	Orleans/Saran	12	36	Fair	Nil	
	St. Cyr	27	81	Unobserved	Poor	
	Toussus-le Noble	11	31	Unassessed		
16 June	Authie/Acheux	17	51	Nil	Nil	
	Reauvais/Tille	17	54	Unobserved	Poor	
	Juvincourt	38	114	Poor	Poor	
	Laon/Athies	38	114	Poor	Poor	
	Laon/Couvron-et-Aumencourt	17	48	Unobserved	Fair	
	St. Andre-de l'Eure	12	32	Unobserved	Fair	
17 June	Angers	80	185	Fair	Excellent	
	Dreux	71	--	Unobserved	Poor	
	Eretigny	28	83	Unobserved	Excellent	
	Brunvillers	12	36	Unassessed		
	Chateaudun	18	34	Unobserved	Good	
	Nancy/Essey	38	98	Unobserved	Poor	
	Guyancourt	26	66	Good	Excellent	
	Illiers-l'Eveque	18	40	Good	Excellent	
	Leval	75	223	Fair	Excellent	
	Le Mans	19	55	Unobserved	Excellent	
	Lonrai	25	61	Good	Unobserved	
	Melun	9	27	Excellent	Excellent	
	Monchy-Breton	72	119	Fair	Poor	
	Tours	55	135	Unobserved	Excellent	
Montdidier	11	30	Unassessed			
19 June	Cabonac	12	22	Unassessed		
	Corme-Ecluse	92	235	Good	Good	
	Bordeaux/Merignac	84	183	Excellent	Excellent	
	Cazaux	39	71	Unobserved	Excellent	
	Landes de Bussac	34	64	Fair	Poor	
20 June	Merville	11	22	Unobserved	Excellent	
22 June	Aeltre	9	18	Unassessed		
	Poperinghe	12	24	Unassessed		
	Sweverseele	9	18	Unassessed		
	Ypres/Vlamertinghe	12	24	Unassessed		
	Buc	36	108	Fair	Poor	
	Coxide	10	65	Poor	Poor	
	Etampes/Mondesir	33	63	Good	Excellent	
	Guyancourt	46	135	Fair	Excellent	
	St. Cyr	43	126	Fair	Poor	
	Dreux	18	43	Unobserved	Excellent	

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<u>Date</u>	<u>Airfield</u>	<u>Number of Aircraft</u>		<u>Results</u>	
		<u>Attacking</u>	<u>Tons</u>	<u>Installation</u>	<u>Landing Ground</u>
23 June	Coulommiers	23	61	Fair	Fair
	Juvincourt	113	250	Unobserved	Excellent
	Laon/Athies	46	125	Unobserved	Excellent
24 June	Chateaudun	45	112	Excellent	Excellent
	Conches	78	187	Unobserved	Excellent
	Essay	31	78	Nil	Nil
	Orleans/Ericy	45	90	Excellent	Excellent
	Toussus-le Noble	45	112	Nil	Nil
	Dreux	8	19	Unobserved	Good
	Tricqueville	12	31	Unassessed	
	Essay strip	37	77	Excellent	Excellent
25 June	Avord	79	133	Fair	Excellent
	Bretigny	37	82	Unobserved	Fair
	Buc	11	33	Unobserved	Poor
	Etampes/Mondesir	12	36	Fair	Excellent
	Bourges	48	119	Unobserved	Excellent
	Muncq	7	13	Nil	Nil
	Orly	18	40	Fair	Excellent
	Peronne	12	26	Good	Good
	Toulouse/Francazal	104	231	Fair	Good
	Toulouse/Blagnac	72	144	Excellent	Good
	Romilly	13	27	Unobserved	Poor
	Villacoublay	63	169	Good	Fair
27 June	Creil	11	29	Unobserved	Good
28 June	Denain/Prouvy	28	63	Fair	Excellent
	Florennes	11	26	Fair	Good
	Juvincourt	64	127	Good	Good
	Laon/Athies	60	120	Unobserved	Excellent
	Laon/Couvron-et-Aumen- court	72	91	Good	Fair
	Le Bourget	19	41	Good	Poor
30 June	Coxysde	11	21	Poor	Nil
	Conches	35	105	Unobserved	Excellent
	Evreux/Fauville	26	72	Unobserved	Excellent
	Le Culot	24	45	Unobserved	Fair
	Montdidier	39	74	Unobserved	Fair
	Abbeville/Drucat	168	17	Nil	Nil
4 July	Beaumont-le-Roger	50	110	Fair	Fair
	Beaumont-sur-Oise	25	56	Good	Fair
	Dreux	24	44	Poor	Excellent
	Creil	12	27	Poor	Fair
	Conches	68	155	Excellent	Excellent
	Evreux/Fauville	49	92	Unobserved	Excellent
	Illiers-l'Eveque	24	42	Unobserved	Poor

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Appendix 2 (Contd)

<u>Date</u>	<u>Airfield</u>	<u>Number of Aircraft</u>		<u>Tons</u>	<u>Results</u>	
		<u>Attacking</u>	<u>Installation</u>		<u>Landing</u>	<u>Ground</u>
5 July	Brussels/Melsbroek	5		9	Nil	Nil
	Eindhoven	13		38	Nil	Nil
	Le Culot	36		68	Nil	Good
	Gilze/Rijen	38		105	Unobserved	Fair
	Tirlemont/Gossoncourt	2		2	Nil	Nil
	Volkel	20		76	Good	Fair
6 July	Berck-sur-Mer	12		29	Nil	Nil
	Chartres	17		50	Unobserved	Poor
	Coxyde	13		30	Nil	Nil
	Densain/Prouvy	12		27	Fair	Nil
	Noorsele	13		29	Nil	Nil
	Norrent-Fontes	12		27	Nil	Nil
	St. Valery-en-Caux	4		12	Nil	Nil
	Lannoy	12		27	Nil	Nil
8 July	Abbeville/Drucat	12		26	Nil	Nil
	Conches	11		33	Good	Excellent
	Poix	61		149	Unobserved	Excellent
	St. Andre-de l'Eure	24		6	Unobserved	Good
	St. Valery-en-Caux	13		32	Nil	Nil
	Ursel	1		4	Nil	Nil
9 July	Brombos	11		26	Fair	Fair
	Chateaudun	36		68	Fair	Poor
	St. Omer/Longuenesse	12		27	Nil	Nil
14 July	Montdidier	51		123	Unobserved	Poor
	Peronne	39		95	Unobserved	Good
	Chateaudun	12		24	Unobserved	Poor
17 July	St. Dizier	11		31	Nil	Nil
	Florennes	31		30	Nil	Poor
23 July	Creil	78		147	Poor	Nil
	Juvin-court	48		150	Nil	Poor
	Laon/Athies	57		112	Good	Good
	Laon/Couvron-et-Amen-court	61		120	Nil	Nil
	Juvin-court	38		105	Excellent	Good
29 July	Laon/Couvron-et-Amen-court	36		103	Poor	Poor
	Creil	36		81	Unobserved	Poor
31 July	Laon/Athies	47		107	Poor	Poor
	Poix	1		1	Unobserved	Nil

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Results

<u>Date</u>	<u>Airfield</u>	<u>Number of Aircraft Attacking</u>	<u>Tons</u>	<u>Installation</u>	<u>Landing Ground</u>
1 August	Chateaudun	108	269	Unobserved	Excellent
	Chartres	64	145	Good	Poor
	Melun	118	315	Excellent	Excellent
	Orleans/Bricy	141	367	Excellent	Excellent
	Tours	76	169	Good	Fair
	Etampes/Mondesir	12	30	Unobserved	Poor
2 August	St. Dizier	12	36	Unobserved	Poor
	Achiet	11	43	Unassessed	
	Danville/Creton	3	9	Poor	Poor
3 August	Toul/Croix de Metz	16	50	Unobserved	Fair
	Conches	27	81	Excellent	Excellent
	Etampes/Mondesir	11	33	Unobserved	Poor
4 August	Achiet	12	34	Unobserved	Fair
	Lille/Vendeville	12	27	Unobserved	Fair
5 August	Coxyde	4	5	Nil	Nil
7 August	Chartres	23	62	Good	Good
	Chateaudun	11	33	Unobserved	Excellent
	Montdidier	1	3	Unobserved	Poor
8 August	Glastres	91	236	Unobserved	Excellent
	Perthes	50	136	Excellent	Excellent
	Laon/Athies	11	31	Good	Poor
	Romilly	53	126	Nil	Nil
	Bretigny	11	32	Unobserved	Excellent
	Villacoublay	12	33	Good	Excellent
9 August	Eindhoven	12	28	Unassessed	
11 August	Coulommiers	47	101	Good	Good
	Toussus-le Noble	45	110	Excellent	Poor
	Villacoublay	76	136	Excellent	Excellent
	Orleans/Saran	9	22	Nil	Nil
	Nivelles	10	30	Unassessed	
12 August	Buc	67	140	Fair	Poor
	Chaumont	72	136	Unobserved	Unobserved
	Etampes/Mondesir	12	33	Fair	Poor
	Juvincourt	52	131	Unobserved	Fair
	Perthes	58	96	Excellent	Excellent
	Laon/Cuvron-et-Aumencourt	61	157	Excellent	Excellent
	Laon/Athies	63	158	Unobserved	Good
	Mourmelon-le-Grand	75	209	Fair	Unobserved
	Toulouse/Francazal	59	159	Excellent	Excellent

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Appendix 2 (Contd)

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<u>Date</u>	<u>Airfield</u>	<u>Number of Aircraft Attacking</u>	<u>Tons</u>	<u>Installation</u>	<u>Landing Ground</u>
14 August	Haguenau	92	227	Excellent	Fair
	Dijon/Longvic	83	212	Excellent	Excellent
	Dole/Tavaux	70	152	Unobserved	Poor
	Lyon/Bron	180	275	Good	Poor
	Metz/Frescaty	72	163	Good	Poor
	Florennes	24	60	Unassessed	
15 August	Florennes	59	146	Unobserved	Good
	Venlo	104	207	Unobserved	Excellent
18 August	Eindhoven	12	36	Fair	Excellent
	Metz/Frescaty	78	142	Excellent	Good
	Nancy/Essey	74	196	Unobserved	Fair
	Roye/Amey	43	76	Excellent	Good
	St. Dizier	117	216	Unobserved	Excellent
25 August	St. Trond/Brusthem	4	12	Fair	Excellent
26 August	Deelen	19	39	Excellent	Excellent
	Eindhoven	36	106	Good	Good
	Venlo	5	4	Unobserved	Fair
17 September	Eindhoven	6	23	Nil	Nil
26 September	Reims/Champagne	43	--	Good	Unobserved

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Appendix 3

Enemy Aircraft Claimed by Eighth Air Force in 1944*

Enemy Aircraft Claimed by Eighth Air Force Heavy Bombers in 1944

<u>Month</u>	<u>In the Air</u>	<u>On the Ground</u>
January	521/124/231	19
February	356/106/261	647
March	409/118/177	281
April	307/114/208	470
May	407/123/208	265
June	45/21/61	178
July	100/38/70	167
August	31/12/38	448
September	90/41/40	32
October	17/14/17	74
November	35/19/56	11
December	63/21/45	50

Enemy Aircraft Claimed by Eighth Air Force Fighters in 1944

January	175/29/70	(Not given)
February	292/29/144	2/0/10
March	406/28/117	98/17/126
April	332/22/100	493/6/455
May	494/31/111	168/0/141
June	284/12/101	121/0/78
July	269/13/97	129/0/85
August	273/9/60	320/0/198
September	469/15/92	393/0/266
October	72/4/11	80/0/30
November	471/25/100	135/0/75
December	478/20/87	13/0/19

* 8th AF Statistical Control Section, Statistical Summary of Eighth Air Force Operations ETO, 17 Aug. 42-8 May 45, p. 21

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Appendix 4

Eighth Air Force Attacks on GAF Airfields
September 1944 - 25 April 1945*

<u>Date</u>	<u>Airfield</u>	<u>Number of Aircraft Attacking</u>	<u>Tons</u>	<u>Installation</u>	<u>Results</u>	
					<u>Landing Ground</u>	<u>Days Unserviceable</u>
10 Sept.	Giebelstadt	112	276	Excellent	Fair	0
12 Sept.	Kitzingen	11	28	Poor	Poor	0
13 Sept.	Schwabisch Hall	65	170	Unobserved	Good	0
18 Sept.	Wiesbaden	12	42	Excellent	Poor	0
26 Sept.	Hesere	3	7	Poor	Poor	0
30 Sept.	Handorf	14	46	Nil	Poor	0
2 Oct.	Fritzlar	12	30	Nil	Poor	0
3 Oct.	Giebelstadt	49	65	Good	Fair	0
	Pforzheim	16	46	Nil	Nil	0
	Lachen/Speyerdorf	113	280	Excellent	Fair	0
	Ottingen	10	25	Fair	Poor	0
5 Oct.	Handorf	67	122	Poor	Good	0
	Lippstadt	175	491	Unobserved	Fair	0
	Federborn	28	81	Excellent	Excellent	7
6 Oct.	Nordholz	2	6	Unobserved	Poor	0
	Stade	31	89	Excellent	Fair	0
	Stargard	163	362	Excellent	Unobserved	Undetermined
7 Oct.	Handorf	12	30	Good	Poor	0
	Nordhausen	35	57	Excellent	Poor	0
	Zwickau	60	150	Unassessed		
	Hamster	12	30	Nil	Nil	Undetermined
12 Oct.	Diepholz	5	13	Poor	Poor	0
15 Oct.	Ostheim	63	18	Unobserved	Excellent	4

* The Contribution of Air Power to the Defeat of Germany, App. C, "Attacks on Enemy Airfields," pp. 171-78.

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Date	Airfield	Number of Aircraft Attacking	Tons	Results		
				Installation	Landing Ground	Days Unserviceable
15 Oct. (Contd)	Cologne	17	47	Poor	Poor	0
25 Oct.	Neumunster	216	591	Unobserved	Excellent	5
26 Oct.	Gutersloh	23	--	Poor	Poor	0
4 Nov.	Nordholz	9	27	Excellent	Poor	0
10 Nov.	Cologne	96	178	Excellent	Excellent	30
	Ostheim	87	161	Unobserved	Excellent	20
	Hanau/Langendiebach	250	444	Unobserved	Excellent	30 +
	Weisbaden	100	176	Excellent	Excellent	8
11 Nov.	Recklinghausen	1	3	Unassessed		
21 Nov.	Vorden	6	16	Good	Poor	0
9 Dec.	Stuttgart/Echterdingen	25	47	Poor	Nil	0
	Stuttgart/Böblingen	94	175	Good	Excellent	16
24 Dec.	Babenhausen	100	335	Unobserved	Excellent	3
	Biblis	100	326	Excellent	Excellent	4
	Darmstadt/Griesheim	196	252	Excellent	Poor	0
	Ettinghausen	43	108	Excellent	Excellent	4
	Frankfurt/Rhein Main	143	494	Good	Excellent	4
	Giessen	74	185	Excellent	Excellent	4
	Gross Ostheim	60	224	Fair	Poor	0
	Kirch Gons	54	135	Excellent	Excellent	Abandoned
	Merzhausen	115	246	Good	Excellent	3
	Nidda	53	133	Good	Excellent	9
	Zellhausen	85	313	Excellent	Excellent	3
	Coblenz	42	105	Unobserved	Excellent	15
31 Dec.	Nordholz	8	20	Fair	Poor	0
	Stade	13	39	Good	Poor	0
5 Jan.	Nieder Breisig	70	130	Poor	Poor	0
	Nieder Breisig	50	101	Poor	Poor	0
10 Jan.	Bonn/Hangelar	63	118	Unobserved	Excellent	1 +
	Cologne/Cstheim	83	152	Unobserved	Poor	0
	Gymnich	52	94	Unobserved	Poor	0
3 Feb.	Vechta	2	5	Poor	Poor	0
9 Feb.	Quakenbrück	1	1	Poor	Poor	0

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Appendix 4 (Contd)

<u>Date</u>	<u>Airfield</u>	<u>Results</u>				
		<u>Number of Aircraft Attacking</u>	<u>Tons</u>	<u>Installation</u>	<u>Landing Ground</u>	<u>Days Unserviceable</u>
14 Feb.	Eger	38	94	Unassessed		
25 Feb.	Schwebisch Hall Giebelstadt	93	209	Unobserved	Poor	0
		96	217	Unobserved	Poor	0
15 March	Dedelstorf	1	3	Nil	Poor	0
19 March	Neuburg	125	284	Poor	Poor	0
	Leipheim	84	190	Poor	Poor	0
	Bassenheim	126	289	Unassessed		
20 March	Nordholz	1	1	Poor	Poor	0
21 March	Gablinen	8	19	Poor	Poor	0
	Handorf	129	321	Excellent	Excellent	1 +
	Vorden	14	43	Poor	Poor	0
	Bad Zwischenahn	57	181	Excellent	Excellent	1 +
	Marx	77	239	Unobserved	Excellent	0
	Wittmundhafen	74	178	Unobserved	Good	0
	Ahlhorn	61	151	Poor	Poor	0
	Hesepe	178	378	Unobserved	Excellent	0
	Achmer	192	438	Unobserved	Excellent	3
	Essen/Mulheim	90	90	Excellent	Excellent	Demolished
	Hopsten	159	325	Excellent	Excellent	3
	Rheine	180	362	Excellent	Excellent	1 +
22 March	Ahlhorn	99	137	Good	Excellent	12
	Kitzingen	168	379	Unobserved	Excellent	9
	Giebelstadt	75	175	Poor	Poor	0
	Frankfurt/Rhein Main	109	274	Excellent	Excellent	1 +
23 March	Ettinghausen	1	2	Poor	Poor	0
24 March	Vechta	179	583	Excellent	Excellent	Demolished
	Steenwijk	114	303	Excellent	Excellent	Demolished
	Bad Zwischenahn	74	253	Unobserved	Poor	0
	Varel	88	398	Unobserved	Excellent	1 +
	Vorrelbusch	113	339	Unobserved	Fair	0
	Plantlunne	111	383	Unobserved	Poor	0
	Wittmundhafen	13	39	Unobserved	Poor	0
	Rheine	37	112	Unobserved	Excellent	Demolished
	Hopsten	62	115	Excellent	Excellent	1 +
	Furstenau/Vechtel	72	134	Excellent	Excellent	Demolished
	Achmer	73	228	Excellent	Excellent	Demolished

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Results

<u>Date</u>	<u>Airfield</u>	<u>Number of Aircraft Attacking</u>	<u>Tons</u>	<u>Installation</u>	<u>Landing Ground</u>	<u>Days Unserviceable</u>
24 March	Hesepe	36	69	Excellent	Excellent	Demolished
(Contd)	Nordhorn	58	122	Unobserved	Excellent	2
	Stormede	96	229	Excellent	Excellent	1 +
	Kirtorf	65	144	Unobserved	Excellent	1 +
	Ziegenhein	104	328	Unobserved	Excellent	1 +
	Twente/Enschede	152	349	Excellent	Excellent	5
3 April	Flensburg	2	6	Poor	Poor	0
4 April	Farchim	33	87	Poor	Poor	0
	Perleberg	29	65	Poor	Poor	0
	Wesendorf	97	219	Poor	Poor	0
	Fassberg	149	384	Unobserved	Excellent	2
	Hoya	37	105	Excellent	Excellent	1 +
	Dedelstorf	13	39	Poor	Poor	0
	Esgebek	2	6	Poor	Poor	0
	Unter Schlauersbach	59	162	Poor	Poor	0
7 April	Kaltenkirchen	143	410	Unobserved	Excellent	8
	Farchim	134	391	Unobserved	Excellent	2
	Salzwedel	1	3	Poor	Poor	0
	Kohlenbissen	93	261	Unobserved	Excellent	6
	Wesendorf	107	248	Excellent	Excellent	1 +
	Fassberg	12	34	Unobserved	Poor	0
	Kaltenkirchen	143	410	Unobserved	Excellent	1
8 April	Schafstadt	73	172	Unobserved	Excellent	3
	Furth/Industrieafen	89	184	Unobserved	Excellent	9
	Unter Schlauersbach	57	125	Unobserved	Excellent	3
	Roth	91	216	Poor	Poor	0
9 April	Ober Pfaffenhoffen	104	297	Unobserved	Poor	0
	Furstenfeld Bruck	139	334	Good	Excellent	8
	Munich/Schleissheim	128	359	Unobserved	Excellent	4
	Neuburr	66	179	Unobserved	Excellent	4
	Munich/Riem	212	550	Poor	Fair	0
	Iechfeld	109	244	Unobserved	Excellent	3
	Nemningen	96	211	Excellent	Excellent	16
	Leipheim	88	213	Unobserved	Excellent	11
	Landsberg	62	147	Unobserved	Excellent	9
	Landsberg East	33	73	Unobserved	Excellent	16
	Stade	14	33	Poor	Poor	0

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Appendix 4 (Contd)

<u>Date</u>	<u>Airfield</u>	<u>Results</u>				
		<u>Number of Aircraft Attacking</u>	<u>Tons</u>	<u>Installation</u>	<u>Landing Ground</u>	<u>Days Unserviceable</u>
10 April	Oranienburg	139	414		Unassessed	
	Zechlin	159	366		Unassessed	
	Zechlin/Larz	103	233		Unassessed	
	Parchim	32	74	Unobserved	Excellent	8
	Zechlin	11	33		Unassessed	
	Neuruppin	132	33	Poor	Poor	0
	Brandenburg/Briest	138	392		Unassessed	
	Zerbst	75	222		Unassessed	
	Burg bei Magdeburg	147	439	Unobserved	Excellent	1 +
11 April	Ingolstadt	131	369	Unobserved	Excellent	1 +
	Regensburg/Ober- traubling	79	181		Unassessed	
20 April	Neuruppin	1	3	Unobserved	Fair	0
	Brandenburg/Briest	137	339		Unassessed	
21 April	Landsberg	6	18	Unobserved	Excellent	4
25 April	Filsen	78	189		Unassessed	

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58. Air Staff SHAEF Report, p. 28; 8th AF Monthly Sum. of Opns., Jan. 1945.
59. Air Staff SFAEF Report, p. 29; 8th AF Monthly Sum. of Opns., Feb. 1945.
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61. Ibid., par. 7; 8th AF Opns. 21-24 Mar. 1945 in Conjunction with the Assault across the Lower Rhine by Allied Ground and Airborne Forces, Introd., pp. 1-2; 8th AF Monthly Sum. of Opns., Feb. and Mar. 1945, Bomber Diaries.
62. Air Opns. PLUNDER-VARSITY, pars. 9-10; 8th AF Monthly Sum. of Opns., Mar. 1945, Bomber Diary.
63. See sources in n. 62; 8th AF Opns. 21-24 Mar. 1945 . . . Lower Rhine, Introd., pp. 2-3.
64. Air Staff SHAEF Report, p. 23.
65. Ibid., p. 25; 8th AF Monthly Sum. of Opns., Oct., Nov., and Dec. 1944, Bomber Diary; 8th AF Intops Sum., Oct., Nov., and Dec. 1944.
66. Air Staff SHAEF Report, p. 29.
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70. Air Staff SHAEF Report, pp. 20-21.
71. Ibid.
72. Ibid.
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74. AAFEB, Third Phase, p. 196; Air Staff SHAEF Report, p. 23.
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78. 8th AF TTR, 22 Feb. 1945, p. 16.
79. Ibid., pp. 5-10.
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81. Ibid., pp. 12-15.
82. Ibid.
83. Report on Attacks Against Enemy Rail Communications 22 Feb. 1945, 8 Mar. 1945, in CLARION file, Rail and Communications Targets.
84. 8th AF TTR, 22 Feb. 1945, p. 16.
85. Ibid., 23 Feb. 1945, pp. 1-10.
86. Ibid.
87. Air Staff SHAEF Report, p. 23.
88. Hist. 8th AF, Mar. 1945, p. 2.
89. Air Staff SHAEF Report, p. 17.
90. 8th AF Intops Sum., 6-15 Feb. 1945.
91. Ibid., 3 and 26 Feb. 1945; Hist. 8th AF, Feb. 1945, pp. 43-44.
92. 8th AF Intops Sum., 12 Mar. 1945; min. Allied Air Commanders Conference, 15 Mar. 1945.
93. Contribution of Air Power to Defeat of Germany, App. G, Pt. I, p. 11; Fg. 8th AF, A-2 Sec., Target Priorities of 8th AF, 15 May 1945, p. 35.

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Chapter V

1. Operation LIFFET, an airborne drop in the Lille, Tournai, Courtrai area for the purpose of seizing a bridge over the Escaut River at Tournai, was planned for 3 September 1944. (See Cops. Memo No. 3, 31 Aug. 1944 and msg. UX67537, Curtis to Spaatz and Doolittle, 3 Sept. 1944, both in LIFFET file.) Operation COMET was scheduled for 8-9 September 1944. This was a IX Troop Carrier Command drop in the Arnhem-Vijfveven area which was postponed to the 10th and finally canceled on that day. (See IX TCC Cord. Warning Order, 6 Sept. 1944, in COMET file; msg. VX25281, CG FAAA to CG 8th AF (sgd. Brereton), 10 Sept. 1944, in MARKET Incoming and Outgoing Messages [hereinafter cited as MARKET Messages].)
2. Hq. 8th AF, Eighth Air Force Operations in Support of First Allied Airborne Army Landings in Holland 17-26 September 1944, p. 1 [hereinafter cited as 8th AF Holland].
3. Hq. Airborne Corps, 21 Army Gp., Operation MARKET Cops. Instr. No. 1, 13 Sept. 1944, p. 1, in Hist. Hq. IX TCC, Sept. 1944, App.
4. Msg. AG110, Fq. AFAF to Hq. 8th AF, 16 Sept. 1944, in MARKET Messages.
5. 8th AF Holland, p. 1; Hq. Airborne Corps, 21 Army Gp., MARKET Cops. Instr. No. 1, 13 Sept. 1944, p. 2, in Hist. IX TCC, Sept. 1944, App.
6. Msg. AG110, Fq. AFAF to Fq. 8th AF, 16 Sept. 1944, in MARKET Messages.
7. 8th Air Force Holland, pp. 3-4.
8. Ibid., pp. 4-6.
9. Msg. 221, IX TCC Adv. Hq. to 8th AF (sgd. Williams), 16 Sept. 1944, in MARKET Messages.
10. Flak Estimate Operation MARKET, 12 Sept. 1944, in MARKET Bulletins, Memos, Correspondence, Maps.
11. 8th Air Force Holland, pp. 4-5.
12. Msg. A97, Fq. AFAF to 8th AF, 16 Sept. 1944, in MARKET Messages.
13. First Allied Airborne Army in Holland September-November 1944, p. 15, in Hist. Hq. IX TCC, Sept. 1944 [hereinafter cited as FAAA Holland]; 8th AF Holland, pp. 7-8. Figures for troop carrier operations are

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taken from FAAA Holland as the best report available for over-all coverage. Operations summaries of Headquarters AEAFF and IX Troop Carrier Command, as well as British records, were also consulted.

14. Since Eighth Air Force Tactical Mission Reports are not available for this period, most of the Eighth Air Force figures for this operation are taken from the Eighth's Monthly Summary of Operations for September. Although this is believed to be the best report available, other records consulted were Eighth Air Force Intops Summaries and the report, Eighth Air Force Operations in Support of First Allied Airborne Landings in Holland 17-26 September 1944 [8th AF Holland] as well as the History of the Eighth Air Force for September 1944.
15. 8th AF Holland, pp. 8-9; 8th AF Monthly Sum. of Opns., Sept. 1944, Tac. Bomber Diary and Fighter Diary, 17 Sept. 1944.
16. FAAA Holland, pp. 16-18.
17. 8th AF Monthly Sum. of Opns., Sept. 1944, Fighter Diary 17 Sept.; 8th AF Holland, p. 11.
18. 8th AF Holland, p. 12.
19. Ibid., p. 13; FM The Viscount Montgomery of Alamein, Twenty-First Army Group: Normandy to the Baltic, p. 175 [hereinafter cited as Normandy to Baltic]; memo for CG IX TCC from Capt. E. C. Thornton, in Hist. IX TCC, Sept. 1944. Captain Thornton jumped with the 101st Airborne Division as an observer.
20. FAAA Holland, pp. 18-19.
21. 8th AF Holland, pp. 14-16; 8th AF Monthly Sum. of Opns., Sept. 1944, Fighter Diary, 18 Sept.
22. Msg. 114, Doolittle to Nun (attn. Gen. F. L. Williams), 23 Sept. 1944, in MARKET Messages.
23. 8th AF Holland, pp. 16-17.
24. Ibid., pp. 17-18; 8th AF Monthly Sum. of Opns., Sept. 1944, Fighter Diary, 18 Sept.
25. 8th AF Holland, pp. 18-19; Normandy to Baltic, pp. 175-76.
26. FAAA Holland, p. 20.
27. 8th AF Monthly Sum. of Opns., Sept. 1944, Fighter Diary, 19 Sept.; 8th AF Holland, pp. 21-22.
28. 8th AF Holland, p. 22; Normandy to Baltic, pp. 177-79.

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29. FAAA Holland, p. 21.
30. 8th AF Holland, p. 24; 8th AF Monthly Sum. of Opns., Sept. 1944, Fighter Diary, 20 Sept.
31. Normandy to Baltic, p. 182; 8th AF Holland, pp. 25-26.
32. FAAA Holland, pp. 21-22.
33. 8th AF Holland, p. 27.
34. Ibid., pp. 27-28.
35. Normandy to Baltic, p. 182; 8th AF Holland, pp. 28-29.
36. FAAA Holland, p. 22; 8th AF Holland, p. 29.
37. Normandy to Baltic, pp. 182-83; 8th AF Holland, pp. 30-31.
38. FAAA Holland, pp. 22-23.
39. 8th AF Holland, pp. 31-32; 8th AF Monthly Sum. of Opns., Sept. 1944, Fighter Diary, 23 Sept.
40. 8th AF Holland, p. 34; Normandy to Baltic, p. 183.
41. FAAA Holland, pp. 23-24.
42. 8th AF Holland, pp. 35-37; Normandy to Baltic, pp. 183-84.
43. FAAA Holland, p. 24.
44. 8th AF Holland, p. 38; 8th AF Monthly Sum. of Opns., Sept. 1944, Fighter Diary, 26 Sept.
45. 8th AF Holland, p. 39.
46. Normandy to Baltic, p. 187.
47. German Air Force Reaction to Airborne Landings in Holland, 2 Oct. 1944, in MARKET file.
48. "Troop Carrier forces returning from Operation MARKET report outstanding assistance and support by members of your commands. They watched with admiration your fighter pilots take out gun positions that would have destroyed troop carrier aircraft and result ed in loss of airborne forces. Please convey to your units our appreciation for a splendid job well done. From this combined effort a new field of employment of airborne forces will surely be effected." (Msg. 2566, Williams to AOC ADGB and CG 8th AF, 17 Sept. 1944, in MARKET Messages.)

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49. Flak Strafing Rpts. by 56th, 18th, 353d, and 356th Fighter Groups, in MARKET file.
50. 8th AF Holland, p. 42.
51. AAFRH-21; Close-in Air Coop., p. 109.
52. Close-in Air Coop., p. 110.
53. Ibid., p. 111.
54. Ibid., p. 112.
55. Ibid., p. 113.
56. Ibid.
57. Ibid., p. 114.
58. Ibid.
59. Arthur Bliss Lane, I Saw Poland Betrayed (New York, 1948), pp. 42-45; Close-in Air Coop., p. 96.
60. I Saw Poland Betrayed, pp. 42-45.
61. Ibid., pp. 43-47.
62. Ibid., pp. 42-52; Hist. Eastern Comd. USSTAF, chap. 5, pars. 40-43.
63. Msg. 5157, CGS to Eisenhower, 10 Sept. 1944, in USSTAF Incoming Messages. All subsequent messages cited are in this file unless otherwise noted.
64. Msg. T735, Walsh to Spaatz (for Doolittle), 13 Sept. 1944.
65. Msg. PX21070, Deane to Arnold, 22 Sept. 1944.
66. Msg. OCTAGCN 9, Arnold to Spaatz, 12 Sept. 1944.
67. Msg. OCTAGCN 9 SP108, Spaatz to Arnold (info. Deane), 13 Sept. 1944.
68. Hist. Eastern Comd. USSTAF, chap. 5, pars. 45-46. See also USSTAF Incoming Messages passim.
69. Msg. D63111, Doolittle to Twining and Eaker (sgd. Spaatz), 19 Sept. 1944; 8th AF TIR, 18 Sept. 1944; Close-in Air Coop., pp. 118-20.
70. Msg. T963, Spaatz to Doolittle, 21 Sept. 1944.
71. Msg. D63111, Doolittle to Twining and Eaker, 19 Sept. 1944; msg. T896, Kessler to Spaatz, 19 Sept. 1944. See also 8th AF Monthly Sum. of Cyns., Sept. 1944, which is the source for the statistics used.

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72. Msg. WARK 2314151Z, ArnoJd to Spantz, 23 Sept. 1944; Hist. Eastern Comd. USSTAF, chap. 5, par. 47; Close-in Air Coop., p. 120.
73. Ltr., Lt. Col. Utnick to Col. A. R. Maxwell, Dir. Opns. 8th AF, 21 Sept. 1944, in MARKET Bulletins, Memos, Correspondence, Maps. See also msg. MX21018, Deane to Marshall, 19 Sept. 1944 and msg. D63111 cited in n. 71.
74. I Saw Poland Betrayed, pp. 48-53.
75. First Allied Airborne Army, Operation VARSITY, p. 1.
76. Air Staff SHAEF Report, pp. 65-66.
77. Report of Eighth Air Force Operations 24 March 1945, p. 14, in Eighth Air Force Operations 21-24 March 1945 in Connection with the Assault across the Lower Rhine River by Allied Ground and Airborne Forces.
78. Ibid., p. 15; TFR, 24 Mar. 1945, in 2d Air Div. Supply, pp. 1-2; 2d Air Div. FO No. 638 VARSITY, 22 Mar. 1945, in 2d Air Div. Supply, pp. 1-6, all three in 8th AF Opns. 21-24 Mar. 1945 . . . Lower Rhine.
79. Ret. of 8th AF Opns. 24 Mar. 1945, p. 15.
80. Ibid.
81. Ibid., p. 16; 8th AF Monthly Sum. of Opns., Mar. 1945.
82. See sources in n. 81.
83. Air Staff SHAEF Report, p. 72.
84. Ibid.
85. Msg. UA6492, Spantz to Eisenhower, 27 Mar. 1945, in Air Staff SHAEF, A-3 Div. CATOR, Cables, etc., to and from CCS, Air Ministry Re Supply Dropping in Holland. All subsequent messages and memos are in this file unless otherwise noted.
86. Msg. FWD19205, SHAEF FWD to Troopers, 15 Apr. 1945.
87. Memo (n.s.), "New DZs Agreed to by 21st Army Group and German Forces in Holland," n.d.; msg. FWD19908, SHAEF FWD (sgd. SCHEFF) to EXFOR MAIN, 25 Apr. 1945.
88. Air Staff SHAEF Report, p. 72; msg. FWD19751, ANCXF MAIN to SHAEF FWD, 23 Apr. 1945.
89. Air Staff SHAEF Report, p. 73.

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90. Ibid., 8th AF Intops Sum., 1-7 May 1945. The Eighth Air Force figures have been taken from the last-named source because there is a typographical error of 100 planes (dispatched by the Eighth on 3 May 1945) in the first-named report. The RAF figures have been taken as usual from the first source since it is usually the best available. See also USSTAF Mission Report on Supply Dropping in Occupied Holland, 1-7 May 1945. Two reports usually used (8th AF TR's and Monthly Opns. Summaries) are not available for this period.
91. Hist. USSTAF, III, chap. 4, pp. 156-57.
92. Ibid., p. 157.
93. Memo by Lt. Gen. W. B. Smith, Operation ECLIPSE: Appreciation and Outline Plan, 24 Nov. 1944, in SHAEF Operation ECLIPSE and Outline Plan, 10 Nov. 1944.
94. Hist. USSTAF, III, chap. 4, p. 159.
95. Ibid., pp. 159-60.
96. Ibid., pp. 157-58.
97. Ibid., pp. 159-60.
98. Mes. FMDL969, USSTAF FWD to FAIA (for GATOR REAR), 15 Sept. 1944, in USSTAF Incoming Messages.
99. Hist. USSTAF, III, chap. 4, p. 162.
100. Memo, Hq. Air Staff SHAEF FWD (GATOR) to Maj. Gen. D. M. Schlatter and AM C.R. Carr, Hq. Air Staff SHAEF, 6 June 1945, in Air Staff SHAEF, A-3 Div. GATOR, Repatriated Allied Personnel 3 Apr-31 May 1945. The Eighth Air Force played only a small part in this operation, and since this type of operation is usually lumped together with other miscellaneous "Special" operations, it is difficult to determine from the records precisely how many planes were employed or when they were dispatched.

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2. Air Cms. NEPTUNE, p. 24.
3. Ibid.
4. Target Priorities of 8th AF, p. 49.
5. Ibid.
6. Ibid., pp. 49-50.
7. Ibid., p. 50.
8. Ibid.
9. Air Cms. NEPTUNE, p. 25.
10. Contribution of Air Power to Defeat of Germany, App. J, n. 172.
11. USSBS, V Weapons Campaign, p. 19.
12. ACM Sir Trafford Leigh-Mallory, "Air Operations by the Allied Expeditionary Air Force in N.W. Europe from Nov. 15th, 1943 to Sept. 30th, 1944," London Gazette (31 Dec. 1946), 4th Supp. (# 37838), 2 Jan. 1947.
13. Hist. 8th AF, June 1944, pp. 15-16.
14. 8th AF Intops Sum., 16 and 18 June 1944.
15. Ibid., 19 June 1944.
16. Ibid., 20 June 1944.
17. Ibid., 21, 22, and 23 June 1944.
18. Ibid., 24 and 25-30 June 1944.
19. Hist. 8th AF, July 1944, pp. 46-47.

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20. Ibid., p. 31.
21. Contribution of Air Power to Defeat of Germany, App. J, pp. 174, 184.
22. Ibid., p. 187.
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24. Ibid., p. 191.
25. Ibid., pp. 191-92.
26. 8th AF Intops Sum., 1-6 July 1944.
27. Ibid., 8 and 9-26 July 1944.
28. Ibid., 1-8 and 9-30 Aug. 1944.
29. Target Priorities of 8th AF, p. 51.
30. Ltr., Doolittle to Spaatz (attn. Anderson), 14 Feb. 1944, in Air Staff SHAEF, files 505, CVRFLORD-NEPTUNE June 1944.
31. USSBS, V Weapons Campaign, pp. 29-33.
32. Contribution of Air Power to Defeat of Germany, App. J, pp. 194-95.

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1. Contribution of Air Power to Defeat of Germany, App. C, p. 132.
2. AAF Reference History No. 10, the War Against the Luftwaffe: AAF Counter-Air Operations April 1943-June 1944.
3. Contribution of Air Power to Defeat of Germany, App. C, p. 136.
4. Ibid., p. 137.
5. Ibid., pp. 138-39.
6. Ibid., p. 139.
7. Air Cops. NEPTUNE, pp. 7-10.
8. Ibid.
9. Contribution of Air Power to Defeat of Germany, App. C, pp. 140-43.
10. Target Priorities of 8th AF, p. 41.
11. Contribution of Air Power to Defeat of Germany, App. C, p. 133.
12. Ibid.; Maj. W. R. Livingston, Operations of 8th Air Force 1943-1945, no pagination.
13. Air Cops. NEPTUNE, p. 55.
14. 8th AF Intops Sum., 25 and 27 June 1944.
15. Contribution of Air Power to Defeat of Germany, App. C, p. 137.
16. Ibid., pp. 147-48.
17. 8th AF Intops Sum., 5 July 1944.
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19. Ibid., 19 July 1944.
20. Ibid., 24 and 31 July 1944.

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22. Livingston, Cops. of 8th AF 1943-1945.
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25. 8th AF Intops Sum., 1 Aug. 1944.
26. Ibid., 8 Aug. 1944.
27. Ibid., 11-12 and 14-15 Aug. 1944.
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31. Hist. 8th AF, Sept. 1944, p. 1.
32. 8th AF Intops Sum., 10 and 13-15 Sept. 1944.
33. Contribution of Air Power to Defeat of Germany, II, p. 174.
34. Hist. 8th AF, Oct. 1944, pp. 39-40.
35. 8th AF Intops Sum., 9 Aug.-30 Nov. 1944; 8th AF Monthly Sum. of Cops., Nov. 1944, Bomber Diary.
36. Air Staff SHAEF Report, p. 78.
37. Ibid., pp. 38-39; 8th AF Intops Sum., 24 Dec. 1944; 8th AF Monthly Sum. of Cops., Dec. 1944, Bomber Diary, 24 Dec.
38. Contribution of Air Power to Defeat of Germany, App. C, p. 155.
39. 8th AF Intops Sum., 24-31 Dec. 1944; Air Staff SHAEF Report, p. 78.
40. Air Staff SHAEF Report, pp. 79-80; Tactical Employment Fighter Operations of the German Air Force, I (Jan. 24, 1946), 18; Allied Air Power and the Ardennes Offensive 15 Dec. 1944-16 Jan. 1945, p. 68.
41. Air Staff SHAEF Report, p. 39.
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46. Hist. 8th AF, Feb. 1945, p. 17.
47. Contribution of Air Power to Defeat of Germany, App. C, p. 155.
48. Air Staff SHAEF Report, p. 40.
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52. Hist. 8th AF, Apr. 1945, pp. 19, 31; Tactical Employment Fighter Operations of GAF, I (Jan. 24, 1945), 130-32 and II, App. IX.
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4. Target Priorities of 8th AF, p. 40.
5. 8th AF TTR, 14 Apr. 1945, p. 1; Air Staff SHAEF Report, p. 61.
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13. Ground Survey of Effect of Napalm Fire Bombs and HE Bombs on Royan Area Tactical Targets in Operation VENERABLE, 2 May 1945, in 8th AF TTR, 14 Apr. 1945.
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18. Air Opns. NEPTUNE, p. 76; Hist. 8th AF, Aug. 1945, p. 30.
19. Hist. 8th AF, Aug. 1945, p. 26.
20. Close-in Air Coop., p. 123.

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22. Ibid., p. 122.
23. Ibid., p. 125.
24. Ibid., p. 126.
25. Hist. 8th AF, July 1944, pp. 25-26.

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2. Ibid., p. 193.
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9. Hist. 8th AF, Mar. 1945, p. 15; Target Priorities of 8th AF, p. 34.
10. Report of Allied Air Operations in Preparation for and in Connection with Operations PLUNDER and VARISITY, 28 Mar. 1945 [hereinafter cited Air Cops. PLUNDER-VARSITY], in Air Staff SHAEP A-3 Cops. Records, Introd.; Air Staff SHAEP Report, p. 57.
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14. Narrative of Operation VARISITY, 24 Mar. 1945, p. 3.
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24. Ibid., Summary of Effort; 8th AF Intops Sum., 21-24 Mar. 1945; Hist. 8th AF, Mar. 1945, p. 15.
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